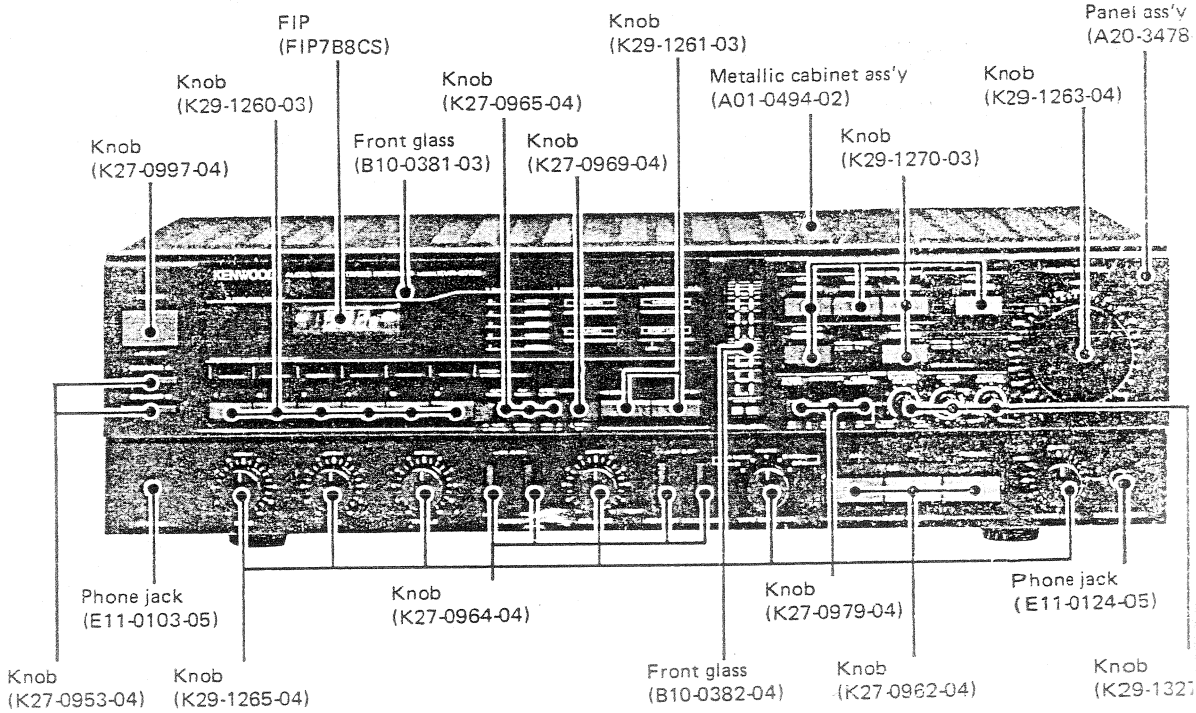
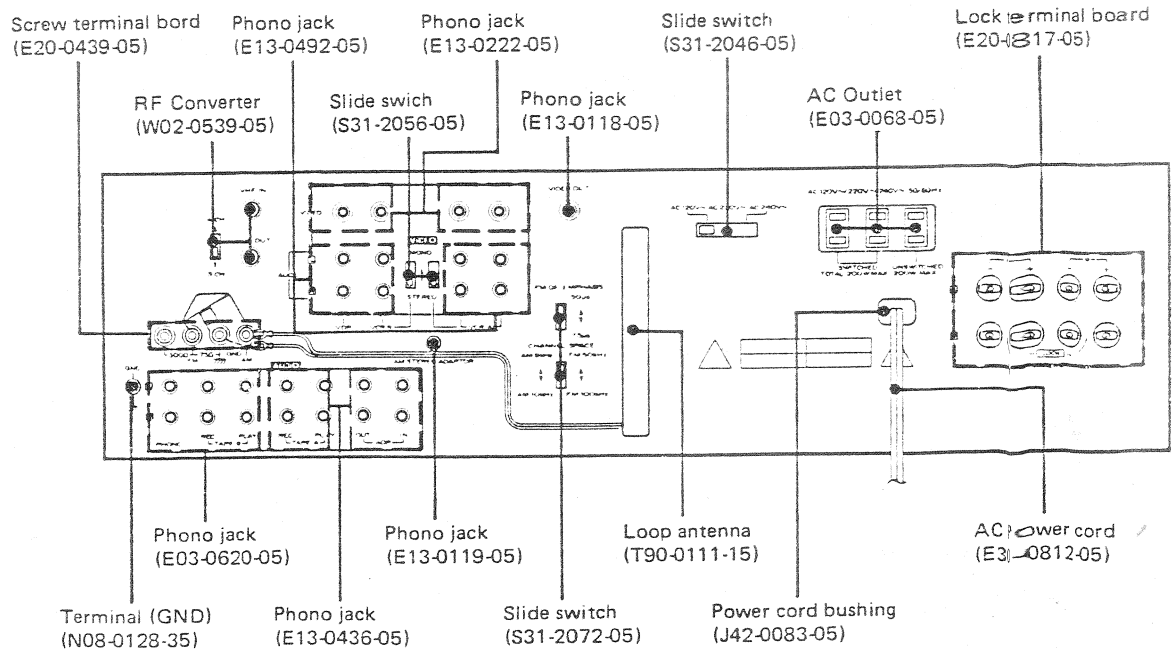
SERVICE MANUAL

KENWOOD

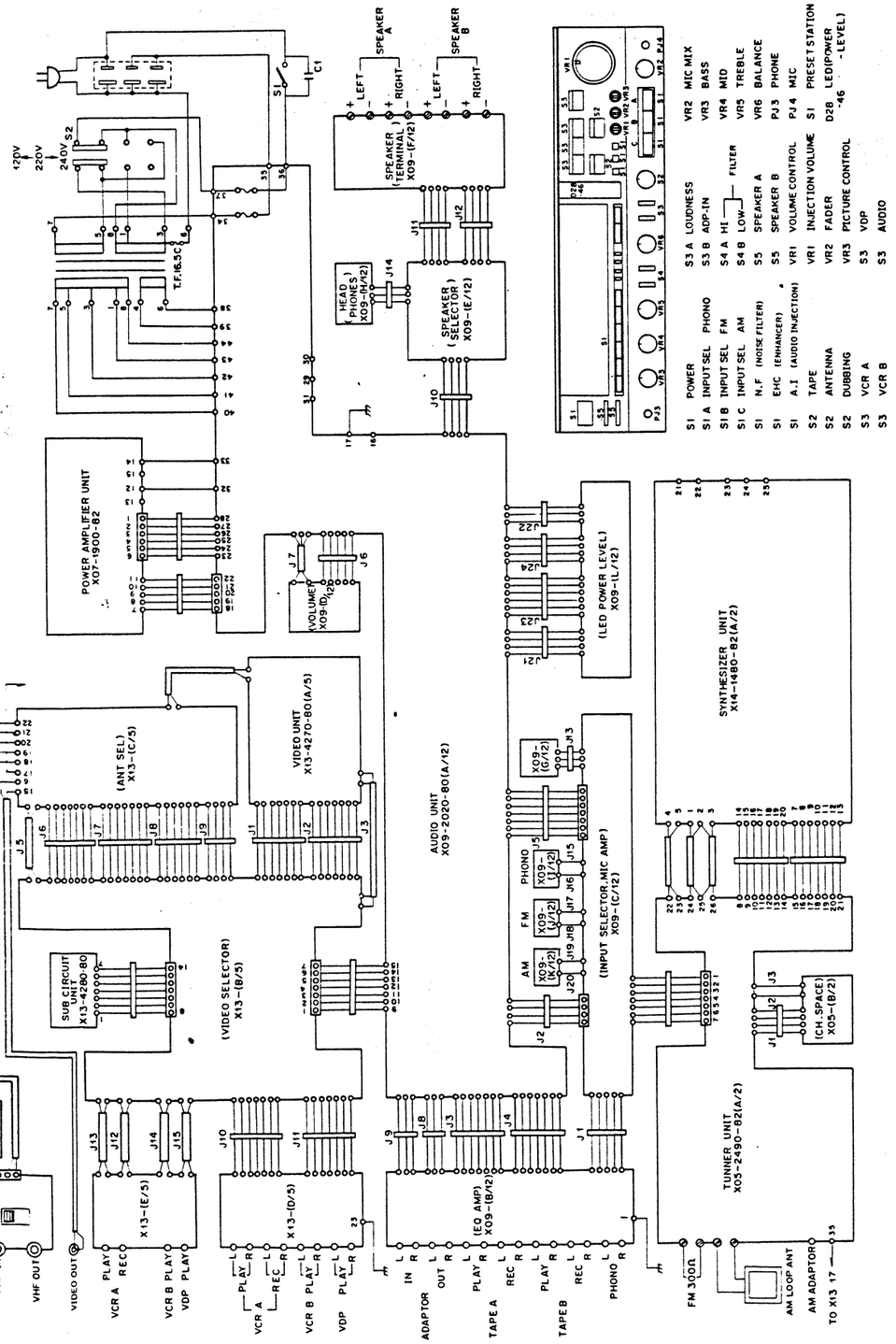
KVR-970

AUDIO VIDEO STEREO RECEIVER





PC BOARD CONNECTION



CIRCUIT DESCRIPTION

DESCRIPTION OF VIDEO CONTROL CIRCUIT

a) Fader

Fig. 1 shows a concept of the fader circuit and **Fig. 2** shows an output waveform.

Voltage E gradually drops from E0 as VR is turned toward the DARK position. Since the output voltage is limited when it exceeds E, the brightness of the light part of the screen is decreased (with color display, colors are omitted in the order of white, yellow, cyan, - - -).

Capacitor C in **Fig. 1** is shorted when VR is turned all the way to the DARK position so that the high frequency components of the video signal are bypassed, resulting in a darker screen.

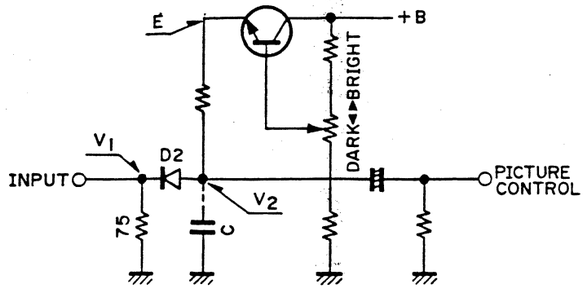


Fig. 1 Concept of FADER circuit

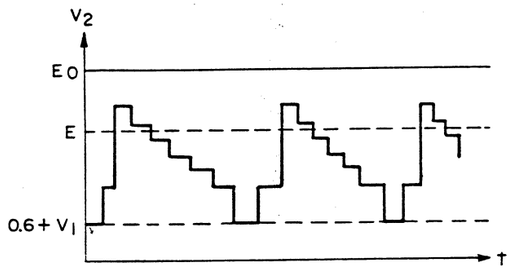
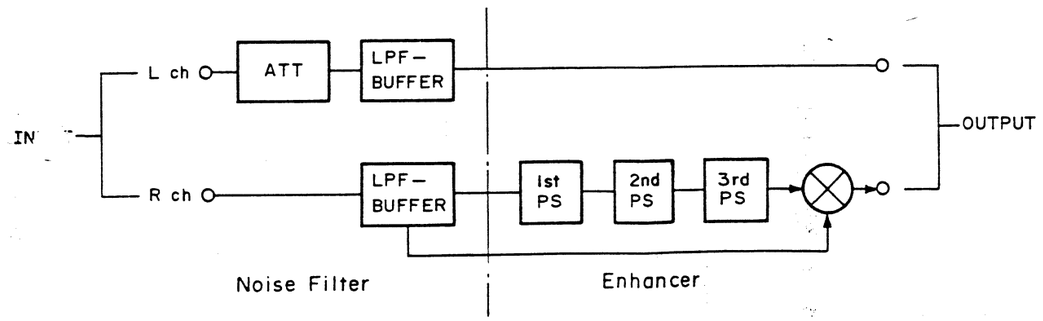


Fig. 2

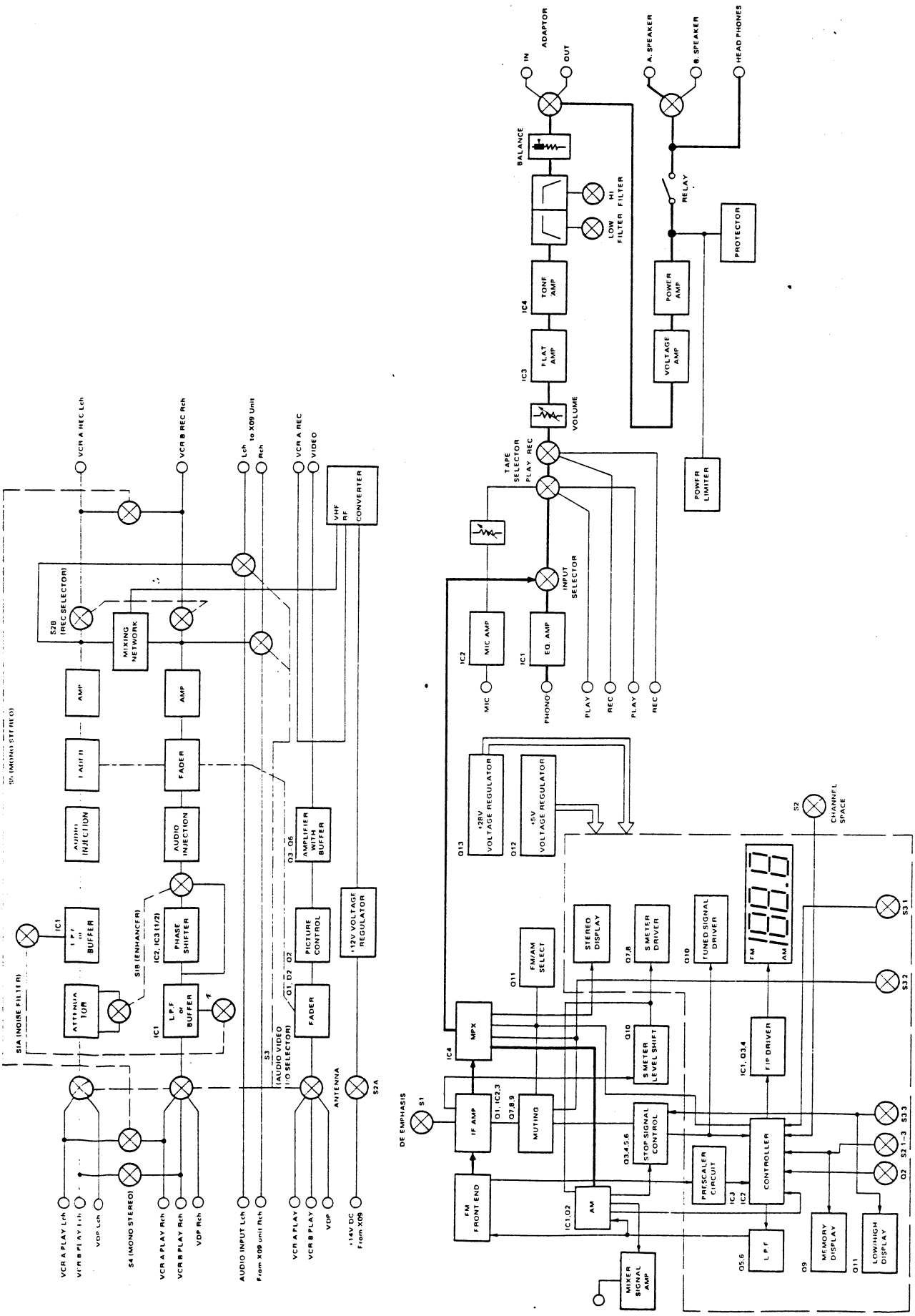


Block diagram

b) Enhancer

A block diagram is shown above. When the enhancer is on, 3 phase shifters (PS) are inserted in the R channel signal line to shift the phase of the R channel audio signal from that of the L channel audio signal. Thus, pseudo stereo-phonic effect is obtained. If only the phase shifters are used, however, sound is heard as if the sound image is more distant in the R channel, resulting in the sound image being placed toward the left side. To compensate this, an attenuator of 2 dB or so is inserted before the L channel noise filter.

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

KVR-970B Synthesizer Unit (X14-1480-82) Semiconductor List

Semiconductor No.	Usage	Remarks
IC1	Fluorescent display static driver circuit	Converts display data from pins 25 to 27 of IC2 into BCD code and drives the fluorescent display.
IC2	PLL digital tuning system circuit	PLL circuit, static control circuit*
IC3	FM prescaler circuit	Controlled by the prescaler control signal from pin 38 of IC2.
Q2	Key entry enabling circuit	ON when selector is set to FM or AM; this enables key input. OFF when selector is set to PHONO or AUX.
Q3	FM scan step frequency indicator switch (switches the LSD between 0 and 5)	ON when Q4 is OFF; this sets the LSD (least significant digit) to 0, e.g., 103.00
Q4	FM scan step frequency indicator switch (switches the LSD between 0 and 5)	ON when the step signal from pin 24 of IC2 is "H" (50 kHz steps); e.g., 103.05
Q5	PLL loop filter circuit	Tuning voltage generator. (V_{CE} varies from 2 to 21 V according to the reception frequency.) Darlington connection
Q6		
Q7	S meter driver circuit	Drives LED (positions 3 to 5) according to the S meter signal from X05. (OFF when signal level is low.)
Q8	S meter driver circuit	Drives LED (positions 1 to 2) according to the S meter signal from X05. (ON even with low signal levels.)
Q9	Preset memory enable lamp drive circuit	ON when the level at the memory storage terminal (pin 11) of IC2 is "H".
Q10	TUNED lamp driver	ON when the stop signal (TUNED signal) from X05 is "L" (reception) and the level at pins 32 and 33 of IC2 is "H".
Q11	Auto-stop L/H lamp circuit	ON when the auto-stop speed is "H".

KVR-970B Video Unit (X13-4270-80) Semiconductor List

Semiconductor No.	Usage	Remarks
IC1	Noise filter	Active low pass filter with a fc of approx. 3kHz
IC2	Phase shifter	1st and 2nd phase shifter for enhancer
1/2 IC3	Phase shifter	3rd phase shifter for enhancer
1/2 IC3	DC bias circuit	Generates input bias voltages for OP amplifiers
IC4	Amplifier	Amplifies the signal by the degree lost at the noise filter and enhancer for dubbing output.
Q1	Fader	Controls the voltage at the cathode of diode D2.
Q2	Picture control	Nonlinear circuit with a center frequency of approx. 1.8MHz
Q3	RF Amplifier	Amplifier and compensator for high frequencies.
Q4		Current amplifier for high frequencies
Q5		
Q6		Makes the high frequency amplifier output current constant.
D1	DC bias current	For the OP amplifier input bias reference voltage
D2	Fader	For the variable level video signal limiter

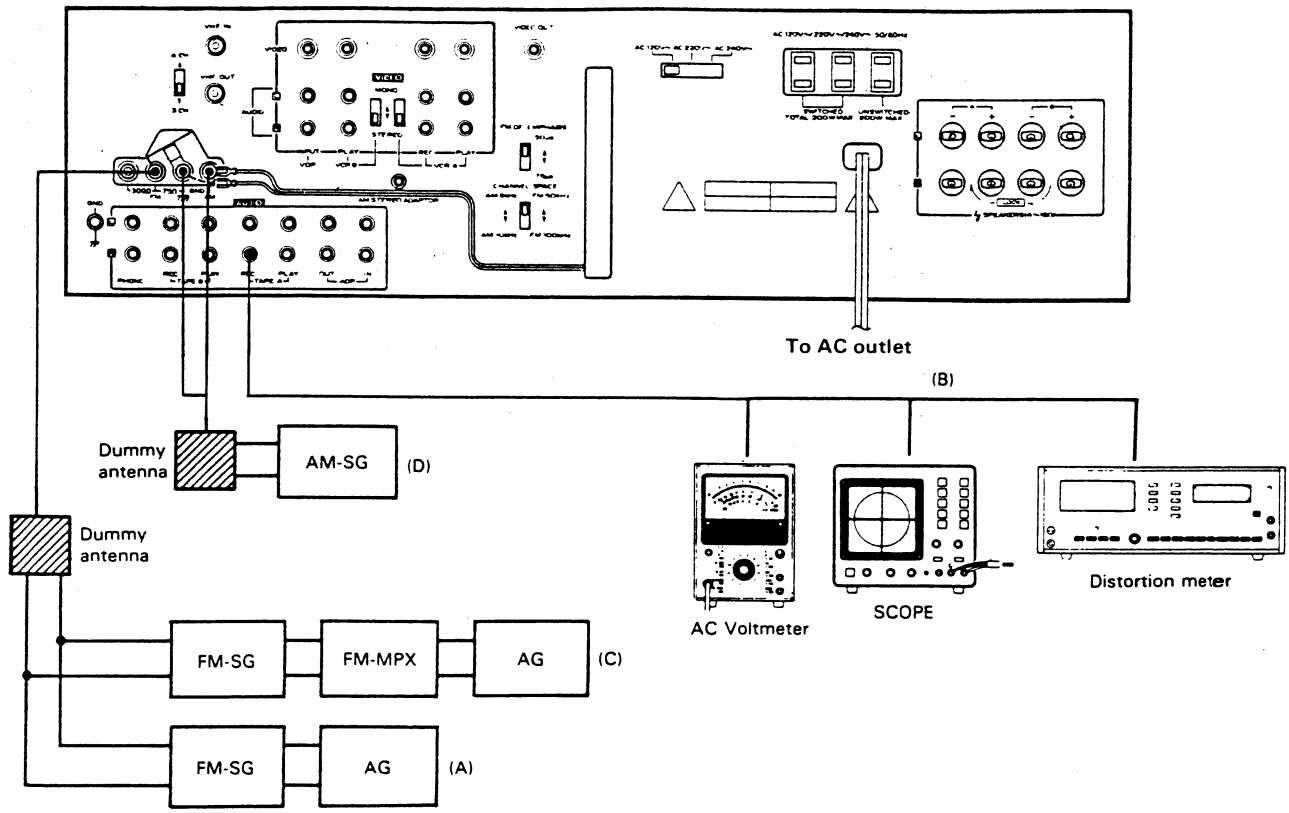
CIRCUIT DESCRIPTION

KVR-370B Tuner Unit (X05-2490-10) Semiconductor List

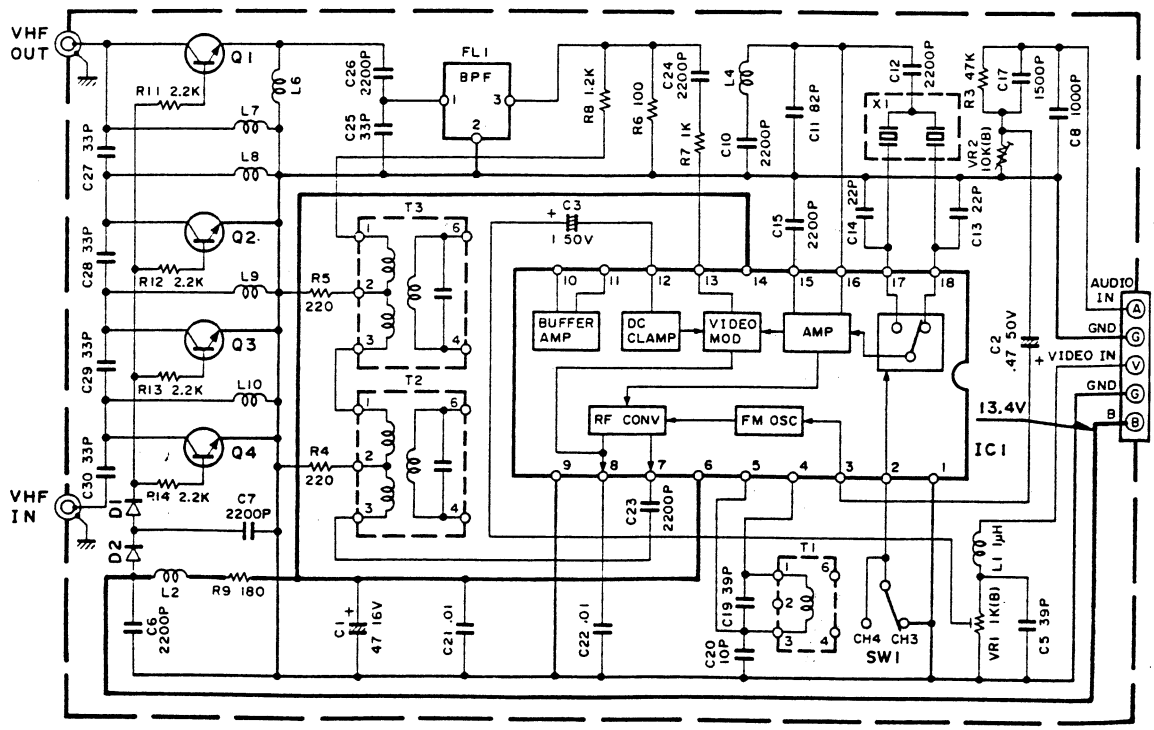
Semiconductor No.	Usage	Remarks
IC1	AM circuit	RF amplifier, mixer, local oscillator, IF amplifier, detector, AGC circuit and S meter circuit
IC2	FM IF amplifier	Wide band amplifier
IC3	FM detector	IF amplifier, quadrature detector, IF muting circuit, S meter circuit
IC4	FM-MPX circuit	MPX circuit, FM/AM switching circuit, Muting circuit
Q1	FM-IF amplifier	ON during FM reception, emitter grounded amplifier (Improving FM sensitivity)
Q2	AM output filter circuit	ON when the TUNED lamp is OFF. (Improving S/N when signal level is low.) (When Q4 is OFF.)
Q3	AM stop signal circuit	Turned ON with IC1 S meter output signal (pin 16) (during reception.) — Threshold level varies when the auto stop switch (L/H) is switched.
Q4		ON when Q3 is ON (during reception.) —Drives Q2 and Q5. OFF during FM reception.
Q5		ON when Q4 is OFF (i.e., when detuned.) (OFF during reception) ON during FM reception.
Q6	Auto-stop signal circuit (TUNED lamp signal)	Turned OFF by the signal from the Schmitt circuit (Q7, Q8) during FM reception (Q5 on). Turned OFF by Q5 during AM reception (Q6 base: "H".)
Q7	Schmitt circuit for FM stop signal	Turned OFF because the muting signal from IC3 pin 12 drops to "L". ON when detuned or during AM reception.
Q8		ON when Q7 is OFF (during reception.) —Drives Q6. OFF when detuned or during AM reception.
Q9	FM IF muting signal circuit	ON during reception (Q7 OFF); this turns off the IF mute signal (pin 5) of IC3. Always ON while in the forced monaural mode or the AM mode.
Q10	Buffer	Buffer for S meter signal output (pin 13 of IC3)
Q11	FM/AM switch muting signal circuit	ON when the selector is set to AM or FM. —The muting signal from from pin 5 of IC3 is H when this signal is L. OFF when the selector is set to PHONO or while the selector setting is being changed.
Q12	X14 unit 5V regulator	For PLL controller IC Rating: Ic=1A or more, Pc=0.9W or more
Q13	X14 unit 28V regulator	For tuning voltage Rating: Ic=300mA or more, Pc=600mW or more, Vceo=80V or more
Q16	AM stereo signal amplifier	Source grounded amplifier —Amplifies the mixer output from pin 7 of IC1.
Q17	AM stereo signal amplifier	Emitter follower

TEST INSTRUMENT CONNECTIONS/RF CONVERTER CIRCUIT

TEST INSTRUMENT CONNECTIONS



RF CONVERTER (W02-0539-05)



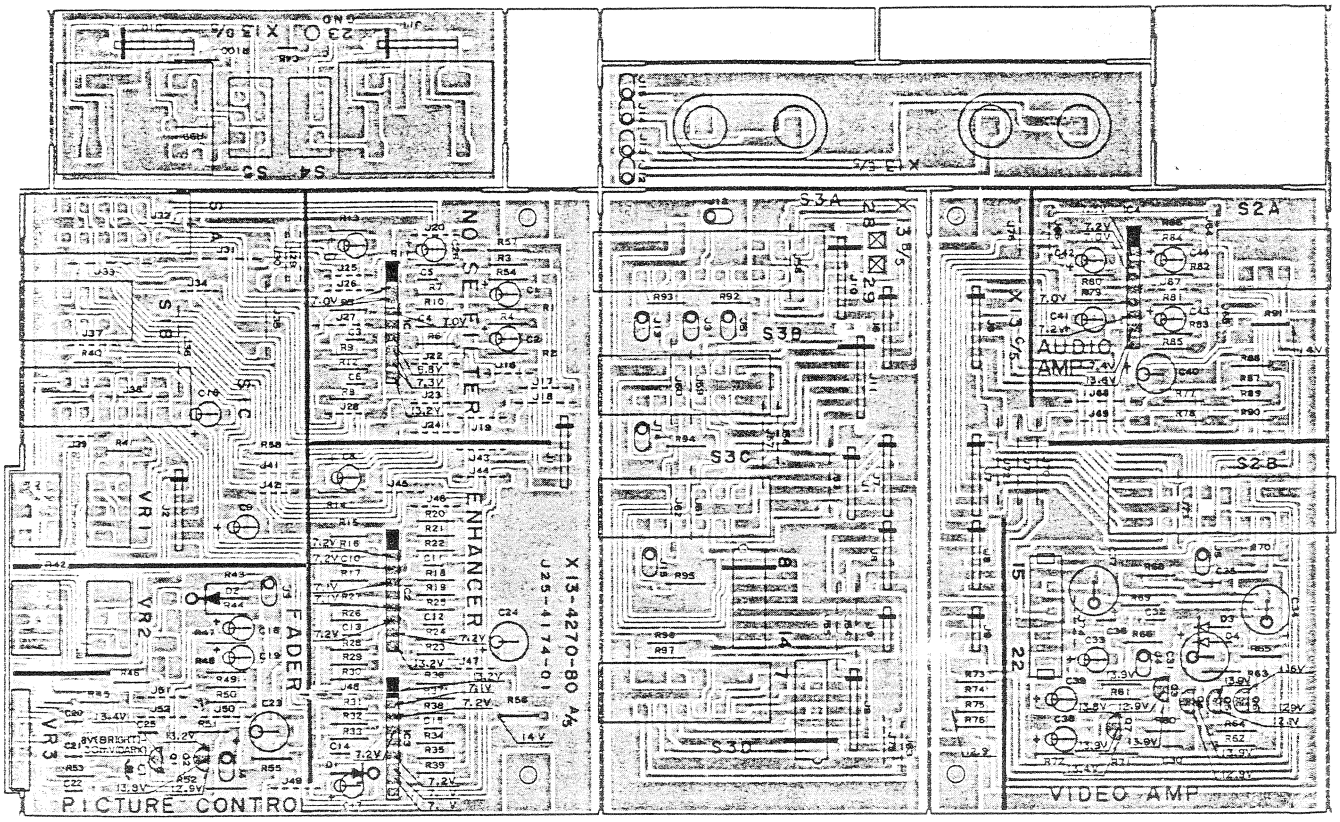
Q1~4 : 2SC3130 or 2SC2480 or 2SC2735 or 2SC2712
IC1 : AN3110
D1,2 : 1SS110 or MA856

ADJUSTMENT

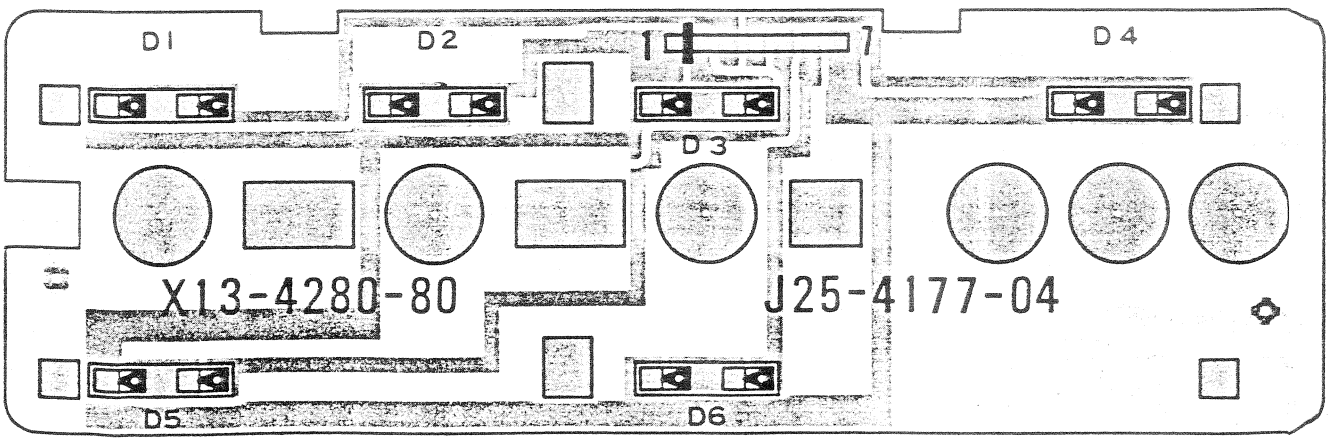
No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	RECEIVER SETTINGS	ALIGNMENT POINTS	ALIGN FOR
FM SECTION		INPUT SELECTOR: FM	MODE: STEREO			
1	**DISCRIMINATOR (1)**	(A) 100.1 MHz 1 kHz ± 75 kHz dev	(B)	MONO 100.1 MHz	Frequency fine-control of FM-SG	Adjust the frequency fin control of FM SG so that same amount of noise observed at the top an bottom of the output wa from with a weak signa
2	**DISCRIMINATOR (2)**	(A) 100.1 MHz 1 kHz ±75 kHz dev 60 dB (ANT input)	Connect a DC voltmeter between TP27 and 28.	MONO 100.1 MHz	L4	0V
3	**DISCRIMINATOR (3)**	(A) 100.1 MHz 1 kHz ±75 kHz dev 60 dB (ANT input)	(B)	MONO 100.1 MHz	L5	Minimum distortion
		Repeat alignments 2 and 3 several times.				
4	**VCO**	(A) 100.1 MHz 0 dev 60 dB (ANT input)	Connect a resistor (330 kΩ) to TP29. Connect a frequency counter to the resistor via an AC voltmeter.	100.1 MHz	VR 1	76.00 kHz
		VCO: Voltage Controlled Oscillator				
5	**SEPARATION**	(C) 100.1 MHz 1 kHz ±68.25 kHz dev Selector: L or R Pilot: ±6.75 kHz dev 60 dB (ANT input)	(B)	100.1 MHz	VR2	Minimum crosstalk. A compromise adjustm may be required if left-right and right-to-left sep tions are unequal.
6	**DISTORTION (STEREO)**	(C) 100.1 MHz 1 kHz ±68.25 kHz dev Selector: L or R Pilot: ±6.75 kHz dev 60 dB (ANT input)	(B)	100.1 MHz	T1 (Front end)	Minimum distortion
AM SECTION		Keep the loop antenna installed.	INPUT SELECTOR: AM			
(1)	**BAND EDGE (1)**	–	Connect a DC voltmeter to TP22	520 kHz (522 kHz)	L3	2.0V
(2)	**BAND EDGE (2)**	–	Connect a DC voltmeter to TP22	1610 kHz (1602 kHz)	TC2	21.0V
		Repeat alignments (1) and (2) several times. 520 kHz, 1610 kHz: for 10 kHz step 522 kHz, 1602 kHz: for 9 kHz area				
(3)	**RF ALIGNMENT (1)**	(D) 630 kHz 400 Hz, 30% mod	(B)	630 kHz	L1	Maximum amplitude symmetry of the osc scope display.
(4)	**RF ALIGNMENT (2)**	(D) 1440 kHz 400 Hz, 30% mod	(B)	1440 kHz	TC1	Maximum amplitude symmetry of the osc scope display.
		Repeat alignments (3) and (4) several times.				
(5)	**IF TRANSFORMER**	(D) 1000 kHz (999 kHz) 400 Hz, 30% mod	(B)	1000 kHz (999 kHz)	L2	Maximum amplitude symmetry of the osc scope display.
AUDIO SECTION						
i	**OFFSET**	–	Connect a DC voltmeter between TP30 and GND (L), TP31 and GND (R), (X09-2020-80)	VOLUME: 0	VR7(L) VR8 (R) (X09-2020-80)	0V
ii	**IDLE CURRENT**	–	Connect a DC voltmeter between TP12 and 13 (L), TP14 and 15 (R). (X07-1900-82)	VOLUME: 0	VR1 (L) VR2 (R) (X07-1900-82)	20–30 mV

PC BOARD

VIDEO UNIT (X13-4270-80)
Component side view



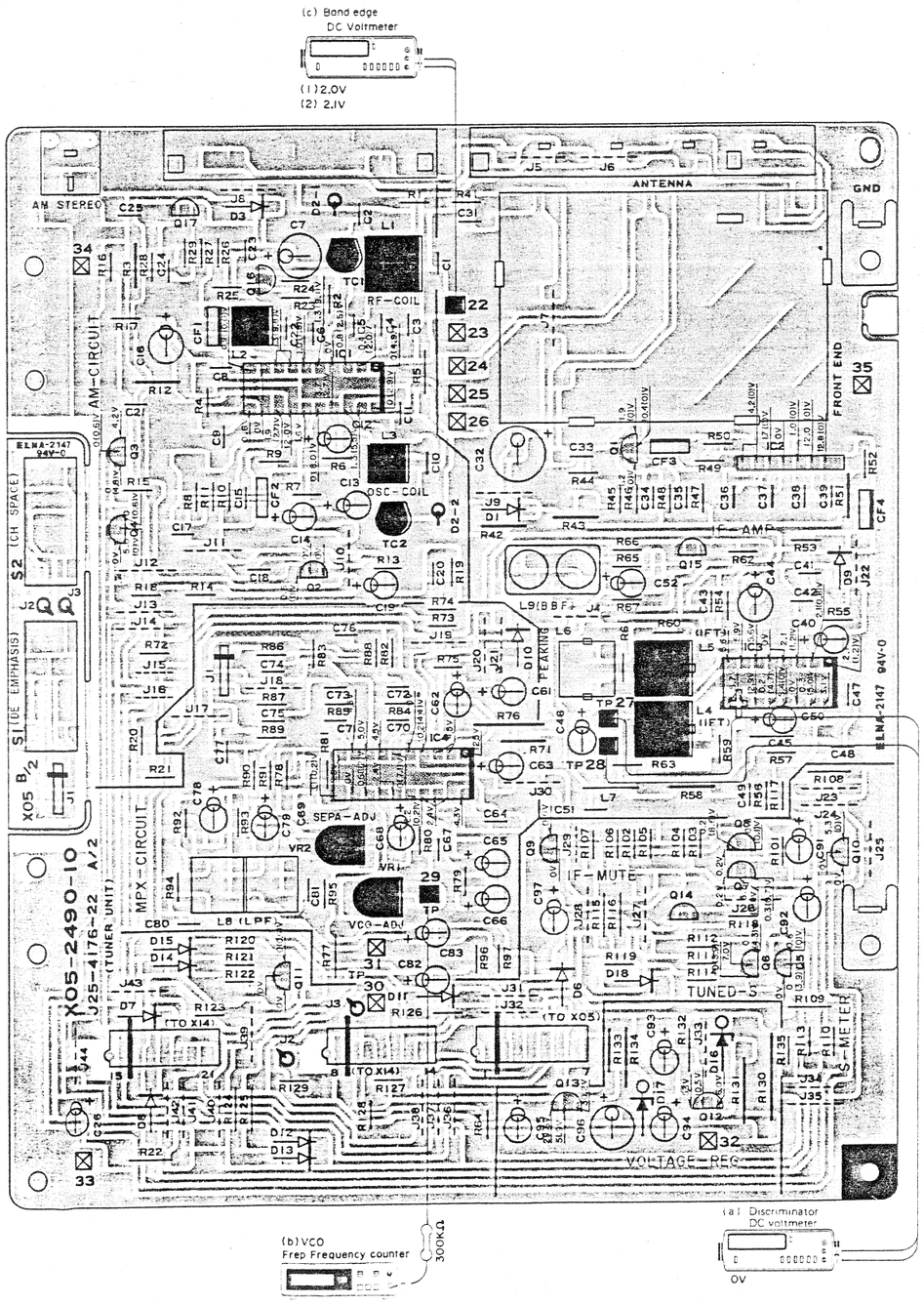
SUB-CIRCUIT UNIT (X13-4280-80)
Component side view



Refer to the schematic diagram for the values of resistors and capacitors.
The PC board drawing is viewing from the side easy to check.

PC BOARD

TUNER UNIT (X05-2490-82)
Component side view



PC BOARD

SYNTHESIZER UNIT (X14-1480-82)
Component side view

IC1

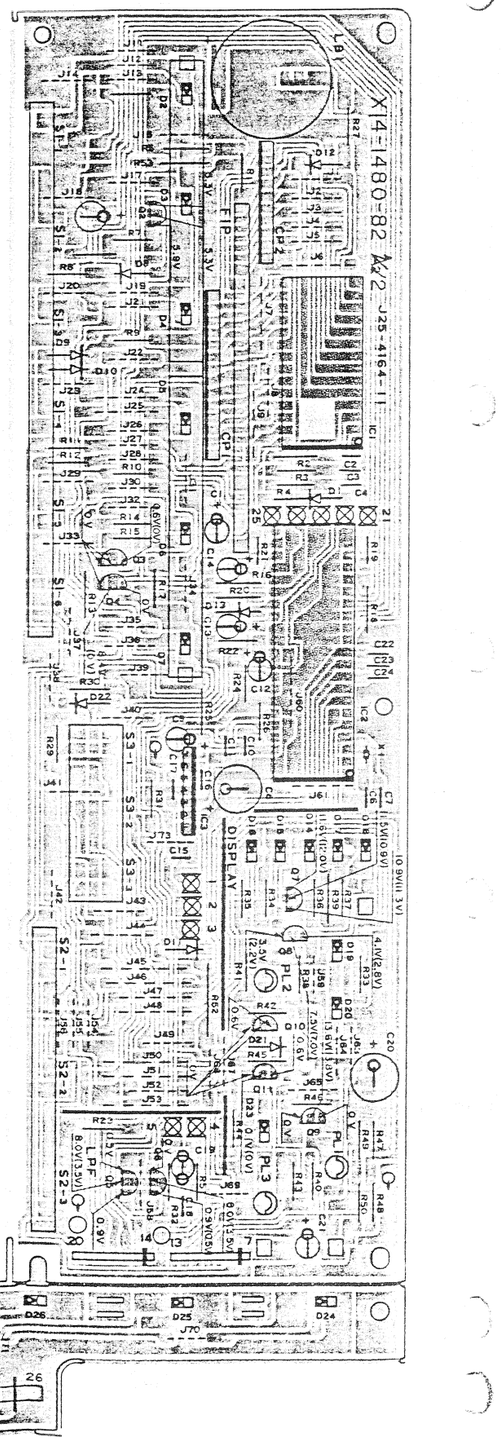
1	0V	15	11.3V (11.1V)
2	0V	16	11.0V (0.5V)
3	0V	17	10.8V (10.6V)
4	0V	18	10.7V (10.5V)
5	0.5V	19	11.0V (10.9V)
6	11.5V (11.3V)	20	11.4V (11.2V)
7	11.5V (11.2V)	21	0.6V (10.7V)
8	0.6V (0.5V)	22	11.0V (10.8V)
9	11.0V (10.8V)	23	10.8V (0.5V)
10	11.1V (10.8V)	24	10.7V (0.5V)
11	11.3V (0.5V)	25	10.4V (10.1V)
12	11.6V (11.4V)	26	10.7V (10.5V)
13	11.3V (11.1V)	27	11.2V (0.5V)
14	0V	28	4.8V (4.7V)

IC2

1	(0V)	22	0V
2	(1.8V)	23	0V
3	(1.8V)	24	0V
4	(0V)	25	0V
5	(4.5V)	26	0V
6	0V	27	0V
7	0V	28	0V
8	4.7V	29	0V
9	0V	30	4.6V (4.5V)
10	0V	31	4.6V (4.5V)
11	0V	32	4.5V (4.4V)
12	3.8V	33	4.5V (4.4V)
13	0V	34	0.9V
14	0V	35	1.8V (0.9V)
15	0V	36	0V
16	0V	37	1.8V (4.1V)
17	0V	38	2.2V (0V)
18	0V	39	4.3V (1.8V)
19	0V	40	4.6V
20	0V	41	4.6V (4.5V)
21	0V	42	4.6V (4.5V)

IC3

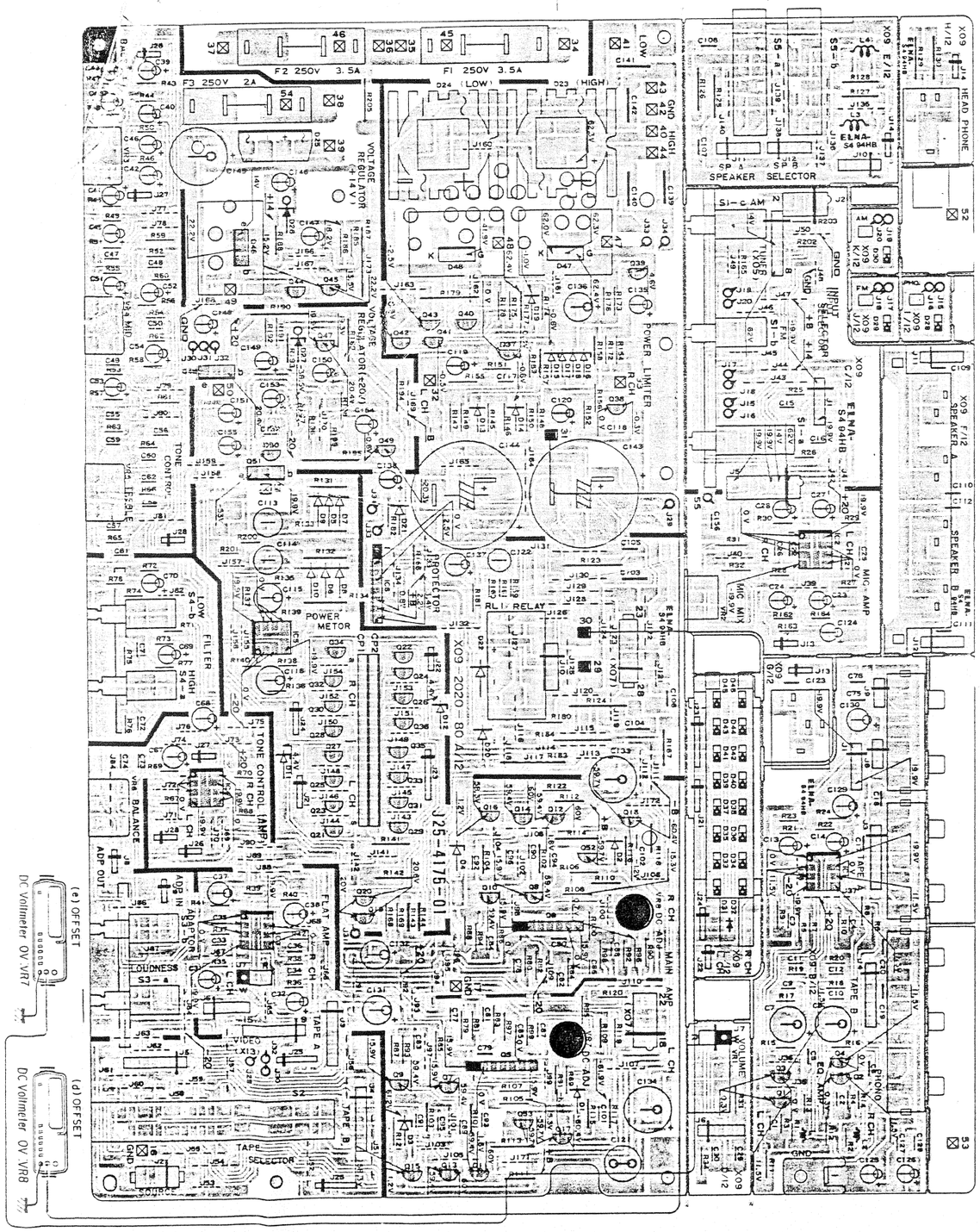
1	5.3V
2	4.7V
3	4.2V
4	0V
5	3.8V
6	3.9V
7	2.2V (0V)



Refer to the schematic diagram for the values of resistors and capacitors.
The PC board drawing is viewing from the side easy to check.

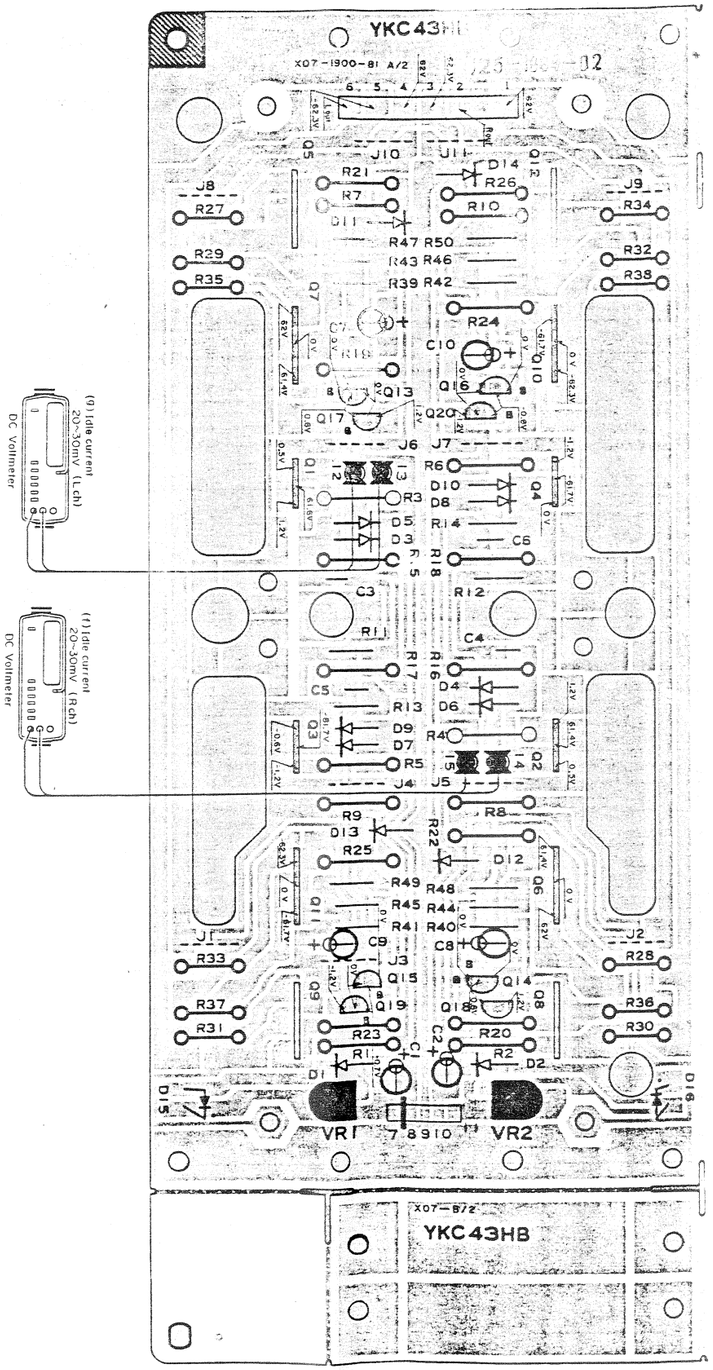
PC BOARD

AUDIO UNIT (X09-2020-80)
Component side view



PC BOARD

POWER AMPLIFIER UNIT (X07-1900-82)
Component side view



Refer to the schematic diagram for the values of resistors and capacitors.
The PC board drawing is viewing from the side easy to check.

REGLAGES

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU AMPLI-TUNER	POINTS DE L'ALIGNEMENT	ALIGNER POUR	FIG.
SECTION MF	SELECTEUR DES ENTRESS: FM	MODE: STEREO					
1	**DISCRIMINATEUR (1)**	(A) 100,1 MHz 1 kHz ± 75 kHz dév	(B)	MONO 100,1 MHz	Réglage fin de fréquence de générateur FM.	Ajuster le réglagefin de fréquence de générateur FM SG de façon que la même quantité dubruit puisse être observe au sommetet en bas de la forme d'onde de sortie sous des conditions d'alimentation de signal faible.	
2	**DISCRIMINATEUR (2)**	(A) 100,1 MHz 1 kHz ± 75 kHz dév 60 dB (Entrée ANT)	Connecter un voltmètre CC entre TP27 et 28.	MONO 100,1 MHz	L4	0V	(a)
3	**DISCRIMINATEUR (3)**	(A) 100,1 MHz 1 kHz ± 75 kHz dév 60 dB (Entrée ANT)	(B)	MONO 100,1 MHz	L5	Distorsion minimale	
Répéter les points 2 et 3 plusieurs fois.							
4	**OSCILLATEUR CONTROLE PAR LA TENSION**	(A) 100,1 MHz 0 dév 60 dB (Entrée ANT)	Relier une résistance de (330 kΩ) à TP29. Raccorder un fréquencemètre à une résistance par l'intermédiare d'un voltmètre CA.	100,1 MHz	VR1	76.00 kHz	(b)
5	**SEPARATION**	(C) 100,1 MHz 1 kHz±68,25 kHz dév Sélection: L ou R Signal pilote: ±6,75 kHz dév 60 dB (Entrée ANT)	(B)	100,1 MHz	VR2	Diaphonie minimale. Un compromis de réglage peut être nécessaire si les séparationde gauche à droite et de droite à gache sont inegales.	
6	**DISTORSION (STEREO)**	(C) 100,1 MHz 1 kHz±68,25 kHz dév Sélection: L ou R Signal pilote: ±6,75 kHz dév 60 dB (Entrée ANT)	(B)	100,1 MHz	T1 (Tête H.F.)	Distorsion minimale	
SECTION MA	Laisser l'antenne bouche MA installée.	SELECTEUR: AM					
(1)	**BORD DE BANDE (1)**	–	Connecter un voltmètre CC à la tige 22.	520 kHz (522 kHz)	L3	2.0V	(c)
(2)	**BORD DE BANDE (2)**	–	Connecter un voltmètre CC à la tige 22.	1610 kHz (1602 kHz)	TC2	21.0V	(c)
Répéter les points (1) et (2) plusieur fois. 520 kHz, 1610 kHz: pour zone de 10 kHz cran 522 kHz, 1602 kHz: pour zone de 9 kHz cran							
(3)	**ALIGNEMENT H.T. (1)**	(D) 630 kHz 400 Hz, 30% mod	(B)	630 kHz	L1	Amplitude et symétrie maximale de láffichage de l'oscilloscope.	
(4)	**ALIGNEMENT H.T. (2)**	(D) 1440 kHz 400 Hz, 30% mod	(B)	1440 kHz	TC1	Amplitude et symétrie maximale de láffichage de l'oscilloscope.	
Répéter les points (3) et (4) plusieurs fois.							
(5)	**TRANS-FORMATEUR F.I.**	(D) 1000 kHz (999 kHz) 400 Hz, 30% mod	(B)	1000 kHz (999 kHz)	L2	Amplitude et symétrie maximale de láffichage de l'oscilloscope.	
SECTION AUDIO							
i	**DECALAGE**	–	Connecter un voltmètre CC entre la tige 30 et GND (G), la tige 31 et GND (R). (X09-2020-80)	VOLUME: 0	VR7 (G) VR8 (D) (X09-2020-80)	0V	(d) (e)
ii	**COURANTE DE POLARISATION**	–	Connecter un voltmètre CC entre la tige 12 et 13 (G), la tige 14 et 15 (D). (X07-1900-82)	VOLUME: 0	VR1 (G) VR2 (D) (X07-1900-82)	20– 30 mV	(f) (g)

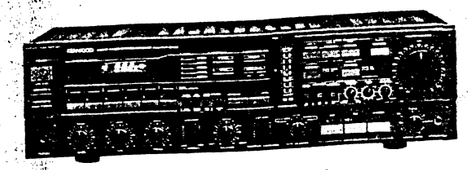
ABGLEICH

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	RECEIVER-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
UKW-EMPFANGSABTEILUNG	EINGANGSUMSCHALTER: FM	MODE: STEREO					
1	**DISKRIMINATOR (1)**	(A) 100,1 MHz 1 kHz ± 75 kHz Hub	(B)	MONO 100,1 MHz	Feinabstimmregler des FM-Signalgenerators	Den Feinabstimmregler des FM-Signalgenerators so einstellen, daß an der oberen und unteren Grenze der Ausgangswellenform bei schwachem Signal dasselbe Geräusch auftritt.	
2	**DISKRIMINATOR (2)**	(A) 100,1 MHz 1 kHz ± 75 kHz Hub 60 dB (ANT-Eingang)	Einen Gleichspannungsmesser zwischen den TP27 und 28 anschließen.	MONO 100,1 MHz	L4	0V	(a)
3	**DISKRIMINATOR (3)**	Dito	(B)	MONO 100,1 MHz	L5	Minimaler Klirrfaktor	
Abstimmungen 2 und 3 mehrere Male wiederholen.							
4	**SPANNUNGS-GEREGELTER OSZILLATOR**	(A) 100,1 MHz 0 Hub 60 dB (ANT-Eingang)	Einen Widerstand (330 kΩ) an den Prüfpunkt TP29 anschließen. Einen Frequenzzähler über einen Wechselspannungsmesser an den Widerstand anschließen.	100,1 MHz	VR1	76,00 kHz	(b)
5	**STEREO KANAL TRENNUNG**	(C) 100,1 MHz 1 kHz ± 68,25 kHz Hub Wahler: L order R Pillotton: ± 6,75 kHz Hub 60 dB (ANT-Eingang)	(B)	100,1 MHz	VR2	Minimales Übersprechen. Eine Ausgleichregelung kann notwendig sein, falls links-zu-rechts und rechts-zu-links trennungen ungleich sind.	
6	**KLIRRFAKTOR (STEREO)**	Dito	(B)	100,1 MHz	T1 (Frontende)	Minimaler Klirrfaktor	
MW-EMPFANGSABTEILUNG	Die MW-Rahmenantenne angebracht lassen.	WÄHLER: AM					
(1)	**BANDKANTE (1)**	–	Einen Gleichspannungsmesser zur Stift 22 anschließen.	520 kHz (522 kHz)	L3	2,0V	(c)
(2)	**BANDKANTE (2)**	–	Einen Gleichspannungsmesser zur Stift 22 anschließen.	1610 kHz (1602 kHz)	TC2	21,0V	(c)
Abstimmungen (1) und (2) mehrere Male wiederholen. 520 kHz, 1610 kHz: für der Zone vom 10 kHz-Kanr der Zone vom10 kHz-Kanalabstand 522 kHz, 1602 kHz: für der Zone vom 9 kHz-Kanalabstand							
(3)	**HF-ABGLEICH (1)**	(D) 630 kHz 400 Hz, 30% mod	(B)	630 kHz	L1	Maximale Amplitude und Symmetrie des Oszilloskopbildes	
(4)	**HF-ABGLEICH (2)**	(D) 1440 kHz 400 Hz, 30% mod	(B)	1440 kHz	TC1	Maximale Amplitude und Symmetrie des Oszilloskopbildes	
Abstimmungen (3) und (4) mehrere Male wiederholen.							
(5)	**ZF-ÜBERTRAGER**	(D) 1000 kHz (999 kHz) 400 Hz, 30% mod	(B)	1000 kHz (999 kHz)	L2	Maximale Amplitude und Symmetrie des Oszilloskopbildes.	
AUDIO-ABTEILUNG							
i	**BERSCHIEBUNG**	–	Einen Gleichspannungsmesser zwischen den Stift 30 und GND (L), den Stift 31 und GND (R) anschließen (X09-2020-80)	VOLUME: 0	VR7 (L) VR8 (R) (X09-2020-80)	0V	(d) (e)
ii	**LEERLAUFSTROM**	–	Einen Gleichspannungsmmesser zwischen den Stift 12 und 13 (L), den Stift 14 und 15 (R) anschließen. (X07-1900-82)	VOLUME: 0	VR1 (L) VR2 (R) (X07-1900-82)	20–30 mV	(f) (g)

KENWOOD

AUDIO VIDEO STEREO RECEIVER

KVR-970B



SPECIFICATIONS

Video section

Video Input Sensitivity/Impedance	
VCR A, VCR B, VDP	1.0 Vp-p/75 ohms unbalanced
Video Output Level/Impedance	
VIDEO OUT, VCR A REC (Pin)	1.0 Vp-p/75 ohms unbalanced
Signal-to-Noise Ratio (Video Signal)	
VCR A, VCR B, VDP → VIDEO OUT	62 dB
Frequency Response (Video Signal)	
VCR A, VCR B, VDP → VIDEO OUT	6.5 Hz – 10 MHz, ±2.0 dB
Audio Input Sensitivity/Impedance	
VCR A, VCR B, VDP	–6 dBs/50 kohms unbalanced
Audio Output Level	
VCR A REC (Pin)	–20 dBs/50 kohms unbalanced
Signal-to-Noise Ratio (IHF-A)	
VCR B, VDP → VCR A REC (Pin)	100 dB
VCR A, VCR B, VDP → SPEAKER	82 dB
Frequency Response	
VCR B, VDP → VCR A REC (Pin)	18 Hz – 350 KHz, –3 dB
VCR A, VCR B, VDP → SPEAKER	18 Hz – 120 KHz, –3 dB
VHF Output Signal	Channel 3 or 4 switchable

General

Power Requirement	120-220-240 V (switchable) 50/60 Hz
Power Consumption	550W at full Power 50W at no signal Switched x 2: total 200W Unswitched x 1: 200W
AC Outlet	
Dimensions	W: 550 mm (21-21/32") H: 165 mm (6-1/2") D: 405 mm (15-31/32")
Weight (Net)	13.3 kg (29.3 lb)
Accessories	F-Connector Cable x 1 Feeder antenna x 1

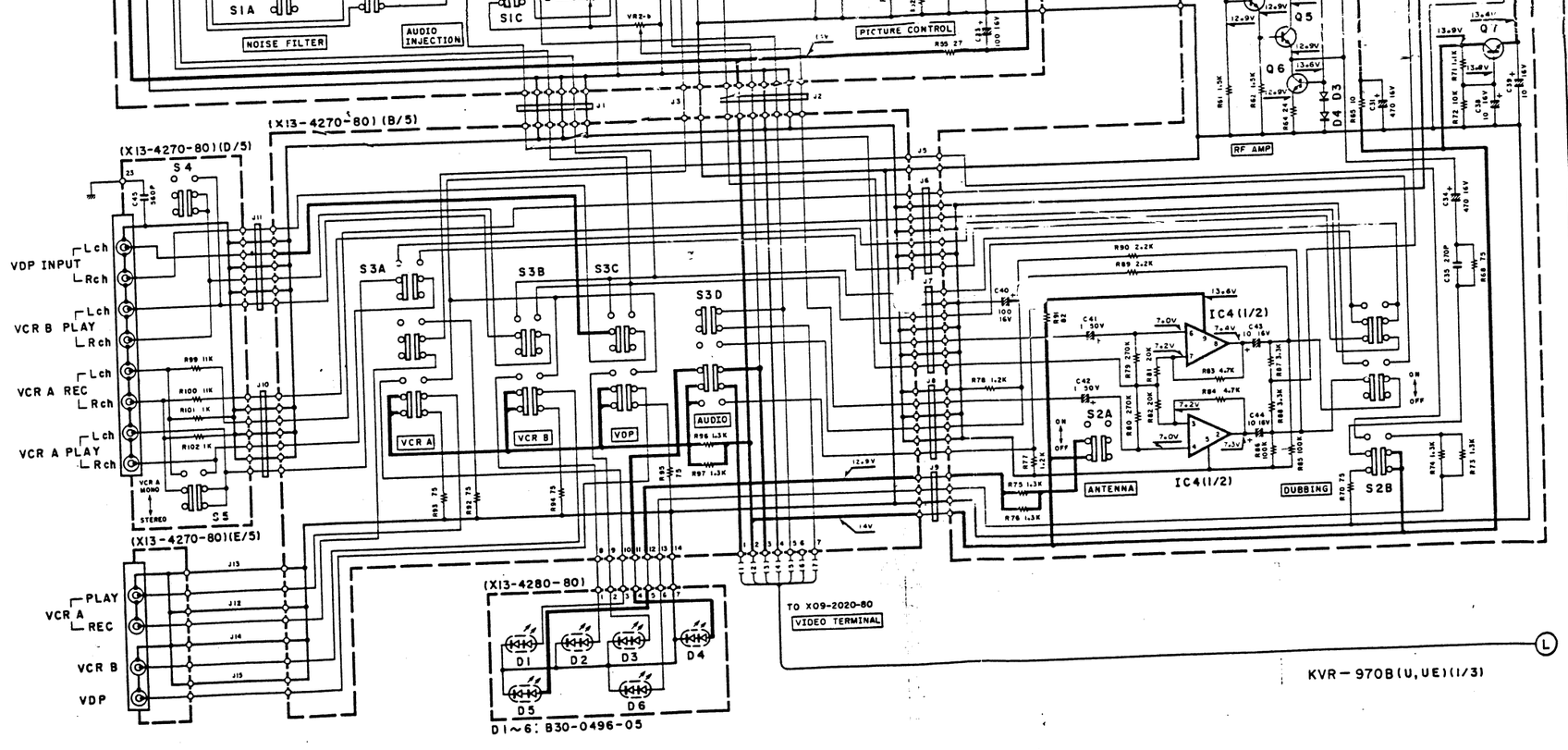
Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

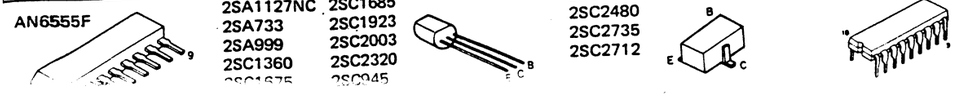
Kenwood poursuit une politique de progrès constants en ce qui doncerne le développement. Pour cette raison, les spécifications sont sujettes à modifications sans préavis.

Kenwood strebt ständige, Verbesserungen in der Entwicklung an. Daher bleiben Änderungen der technischen Daten jederzeit vorbehalten.

DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.
Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.
Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Voltmeter gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

IC1~4 : AN6555F
Q1 : 2SC945(A)(Q, P) or 2SC2320(E, F) or 2SC1685(R, S)
Q2,4 : 2SC1923 or 2SC1675
Q3 : 2SA733(A)(Q, P) or 2SA999(E,F) or 2SA1127NC(R, S)
Q5 : 2SC1360
Q6,7 : 2SC2003
D1 : RD7.5EB1
D2 : 1N60
D3,4 : 1S2076 or 1S1555





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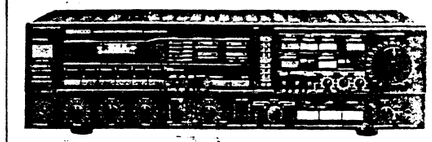
AUDIO VIDEO STEREO RECEIVER

KVR-970B



SPECIFICATIONS

FM Tuner section

Tuning Frequency Range	87.5 MHz – 108 MHz
Sensitivity	
Usable Sensitivity (IHF):	
MONO	1.9 μV (10.8 dBf)
50 dB Quieting Sensitivity (IHF):	
MONO	2.8 μV (14.2 dBf)
STEREO	38 μV (36.8 dBf)
Total Harmonic Distortion	
MONO at 1,000Hz	0.07%
STEREO at 1,000 Hz	0.08%
Signal-to-Noise Ratio	
MONO	80 dB
STEREO	74 dB
Capture Ratio	1.5 dB
Alternate Channel Selectivity	
(IHF ±400 kHz)	60 dB
Stereo Separation	
1,000 Hz	50 dB
50 Hz – 10,000 Hz	40 dB
Frequency Response	30 Hz – 15,000 Hz, +0.5, -2.0 dB
Image Rejection Ratio	80 dB
IF Rejection Ratio	95 dB
Spurious Response Ratio	95 dB
AM Suppression Ratio	60 dB
Sub-Carrier Suppression Ratio	67 dB

AM Tuner section

Tuning Frequency Range: MW	520 kHz – 1,610 kHz
Usable Sensitivity	10 μV (400 μV m)
Signal-to-Noise Ratio	48 dB
Image Rejection Ratio	40 dB
Selectivity	25 dB

General

Power Requirement	120/220/240 V switchable: 50/60 Hz
Power Consumption	550W at full Power, 50W at no signal
AC Outlet	Switched x 2 total 200W, Unswitched x 1 200W
Dimensions	W 560 mm (21-21/32"), H 165 mm (6-1/2"), D 405 mm (15-31/32")
Weight (Net)	13.3 kg (29.3 lb)
Accessories	F Connector Cable x 1, Feede antenna x 1

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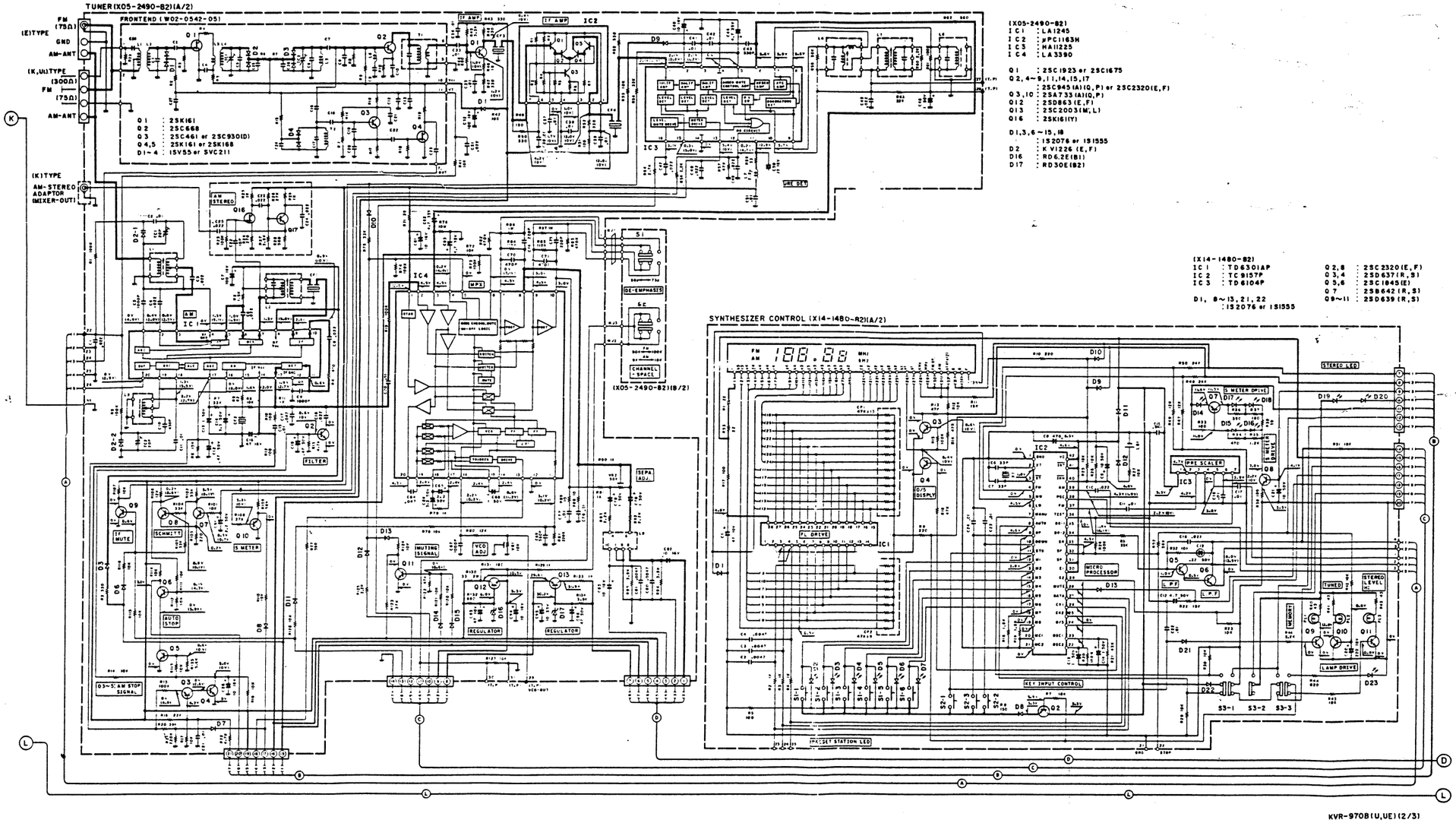
DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.
Les tensions c.c. doivent être mesurés avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.
Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen. Voltmeter gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen instrumenten oder Geraten u.U. geringfügig.



(X05-2490-82)
IC1 : LA1245
IC2 : μPC1163H
IC3 : HA11225
IC4 : LA3390

Q1 : 2SC1923 or 2SC1675
Q2, 4~9, 11, 14, 15, 17 : 2SC945 (A) (Q, P) or 2SC2320 (E, F)
Q3, 10 : 2SA733 (A) (Q, P)
Q12 : 2SD863 (E, F)
Q13 : 2SC2003 (M, L)
Q16 : 2SK161 (Y)

D1, 3, 6~15, 18 : 1S2076 or 1S1555
D2 : K V1226 (E, F)
D16 : RD6.2E (B1)
D17 : RD30E (B2)

(X14-1480-82)
IC1 : TD6301AP
IC2 : TC9157P
IC3 : TD6104P

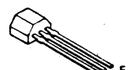
D1, 8~13, 21, 22 : 1S2076 or 1S1555

Q2, 8 : 2SC2320 (E, F)
Q3, 4 : 2SD637 (R, S)
Q5, 6 : 2SC1845 (E)
Q7 : 2SB642 (R, S)
Q9~11 : 2SD639 (R, S)

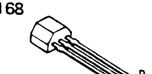
2SA733 2SC2320
2SC1675 2SC461
2SC1845 2SC930
2SC1923 2SC945
2SC2003 2SD863

2SB642
2SD639

2SC668



2SK161
2SK168

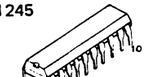


TD6104P

HA11225

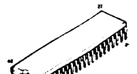
TD631AP

LA3390
LA1245



UPC1163H

TC9152P



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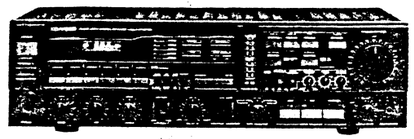
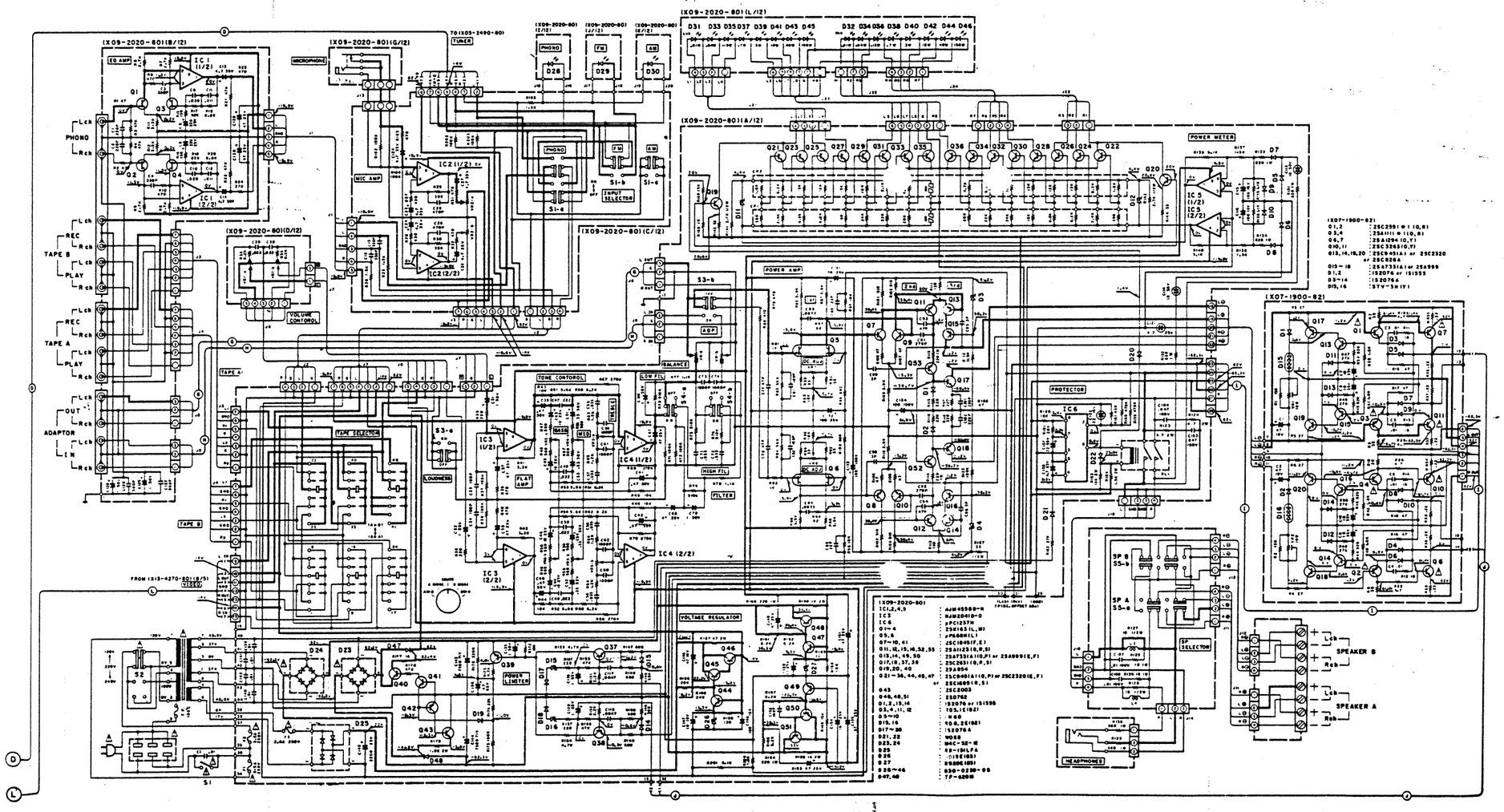
AUDIO VIDEO STEREO RECEIVER

KVR-970B





SPECIFICATIONS

Audio section

Continuous Average Power Output
100 watts per channel minimum RMS, both channels driven, at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.008% total harmonic distortion.

Both Channel Driven	
into 8 ohms at 1,000Hz	110W + 110W
into 4 ohms at 1,000Hz	110W + 110W
Dynamic Power Output	
at 4 ohms	320W
Total Harmonic Distortion	
at Rated Output, 20 Hz – 20,000 Hz	0.008%
at 1 watt Output, 20 Hz – 20,000 Hz	0.005%
Intermodulation Distortion	
(60 Hz : 7 kHz = 4 : 1)	
at Rated Output into 8 ohms	0.008%
Slew Rate	± 120V/μs
Rise Time	1.5μs
Frequency Response	
PHONO (RIAA)	30 Hz – 20,000 Hz ± 0.3 dB
TAPE	7 Hz – 120,000 Hz +0, –3 dB
Power Amp (ADP IN)	DC – 200,000 Hz, +0, –3 dB
Signal-to-Noise Ratio (IHF-A)	
PHONO (MM) at 2.5 mV Input	86 dB
PHONO (MM) at 5.0 mV Input	92 dB
TAPE	101 dB
MIC	70 dB
Tone Control	
BASS	± 12 dB at 100 Hz
MID	± 12 dB at 1 kHz
TREBLE	± 12 dB at 10 kHz
Low Filter	6 dB/oct at 18 Hz
High Filter	6 dB/oct at 5 kHz
Loudness Control	
(at –30 dB VOLUME level)	+10 dB at 100Hz
Damping Factor	
1,000 Hz, 8 ohms	40
Input Sensitivity/Impedance (at Rated Output)	
PHONO (MM)	2.5 mV/50 kohms
TAPE	150 mV/50 kohms
MIC	2.0 mV/50 kohms
Phono Maximum Input Level	
PHONO (MM) at 1,000 Hz, 0.008% THD	200 mV
Output Level/Impedance	
TAPE REC	150 mV/2 kohms
ADP OUT	1V/1 kohm

General

Power Requirement	120-220-240 V (switchable) 50/60 Hz
Power Consumption	550W at full Power 50W at no signal
AC Outlet	Switched x 2: total 200W Unswitched x 1: 200W
Dimensions	W: 550 mm (21-21/32") H: 165 mm (6 1/2") D: 405 mm (15-31/32")
Weight (Net)	13.3 kg (29.3 lb)
Accessories	F-Connector Cable x 1 Feeder antenna x 1

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ΔIndicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

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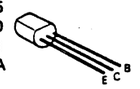
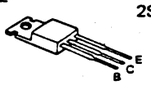
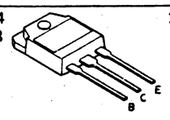
2SA1111 2SC1685
2SA1123 2SC1845
2SA733 2SC2320
2SA954 2SC2631
2SA999 2SC828A
2SC945



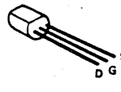
2SD762



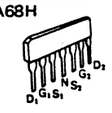
2SA1294
2SC3263



2SK163

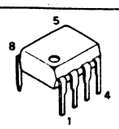


UPA68H



UPC1237H

NJM4558D
NJM2041D



PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

	Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
				KVR-970B (UNIT)			
	1	1A	*	A01-0494-02	METALLIC CABINET ASSY		
	2	2A	*	A20-3478-03	PANEL ASSY		
	3	3B	*	B03-0277-04	DRESSING PLATE (POWER IND.)		
	4	3A		B10-0381-03	FRONT GLASS (TUNER)		
	5	3A		B10-0382-04	FRONT GLASS (POWER IND.)		
	6	2B	*	B11-0040-03	COLOR FILTER (FOR FIP)		
	-			B46-0094-03	WARRANTY CARD		
	-			B46-0095-03	WARRANTY CARD		
	-		*	B50-4890-00	INSTRUCTION MANUAL		
	-			B58-0222-14	CAUTION CARD	UE	
	-			B58-0223-04	CAUTION CARD	U	
	-			B59-0092-00	SERVICE DIRECTORY		
⚠	C1	1B		C91-0023-05	CERAMIC 0.01UF AC250V		
	7	1D		D32-0082-04	SWITCH STOPPER		
⚠	8	1D	*	E03-0068-05	AC OUTLET		
	9	1B		E30-0714-15	PIN PLUG CORD		
⚠	10	1D		E30-0812-05	AC POWER CORD		
	PJ1	1D	*	E13-0118-05	PHONO JACK (VIDEO OUT)		
	11	3A		G01-0488-04	COMPRESSION SPRING(VIDEO SEL.)		
	12	3A		G01-1378-04	COMPRESSION SPRING(PRESET)		
	-		*	H01-4799-04	ITEM CARTON CASE		
	-		*	H10-1672-02	POLYSTYRENE FOAMED FIXTURE (L)		
	-		*	H10-1673-02	POLYSTYRENE FOAMED FIXTURE (R)		
	-			H20-0442-04	PROTECTION COVER		
	-			H25-0078-04	PROTECTION BAG		
	13	3C,3D		J02-0101-05	FOOT		
	14	1D		J19-0626-12	ANTENNA HOLDER		
⚠	15	1D		J42-0083-05	POWER CORD BUSHING		
	16	2B		K27-0953-04	KNOB (BUTTON)SPEAKER X2		
	17	3B		K27-0962-04	KNOB (BUTTON)INPUT SEL. X3		
	18	3B		K27-0964-04	KNOB (BUTTON)FILT/ADP/LOUD. X4		
	19	3A		K27-0965-04	KNOB (BUTTON)FM MODE X3		
	20	3A		K27-0969-04	KNOB (BUTTON)MEMORY X1		
	21	3B	*	K27-0979-04	KNOB (BUTTON)ENHANSER X3		
	22	2B		K27-0997-04	KNOB (BUTTON)POWER X1		
	23	3A		K29-1260-03	KNOB..PRESET STATION X6		
	24	3A		K29-1261-03	KNOB..TUNING UP/DOWN X2		
	25	3A		K29-1263-04	KNOB..VOLUME CONTROL X1		
	26	3A		K29-1265-04	KNOB..TONE,BALANCE,TAPE SELX6		
	27	3A		K29-1270-03	KNOB..VIDEO		
	28	3B	*	K29-1327-04	KNOB..PICTURE CONTROL X3		
⚠	29	1C	*	L01-3186-05	POWER TRANSFORMER		
	-			N09-0292-05	STEPPED SCREW (3X19)		
	-	1D	*	N14-0137-04	HEXAGON NUT		
⚠	S1	2B		S40-1073-05	PUSH SWITCH (POWER SW.)		
⚠	S2	1C,1D		S31-2046-05	SLIDE SWITCH (POWER TYPE)		
	30	1D		T90-0111-15	LOOP ANTENNA		
	31	1B		T90-0132-05	T TYPE ANTENNA		

E: Scandinavia & Europe H:Audio Club K: USA P: Canada
S: South Africa T: England U: PX(Far East, Hawaii)
UE : AAFES(Europe) X: Australia M: Other Areas

⚠ Indicates safety critical component.

KVR-970B KVR-970B

EXPLODED VIEW

Exploded No. lager than 100 are not supplied.

A	M3x6		: N30-3006-46
B	ϕ3x6	(F-Tap)BLK	: N88-3006-45
C	M3x8		: N30-3008-46
D	M3x8	(F) BLK	: N32-3008-45
E	ϕ3x8	(Br-Tap)	: N87-3008-46
F	ϕ3x8	(TP-Tap)	: N91-3008-46
G	ϕ3x8	(F-Tap)BLK	: N88-3008-45
H	ϕ3x8	(Bi-Tap)	: N89-3008-46
I	ϕ3x8	(Bi-Tap)BLK	: N89-3008-45
J	ϕ3x10	(TP-Tap)	: N91-3010-46
K	ϕ3x12	(TP-Tap)	: N91-3012-46
L	ϕ4x8	(Br-Tap)	: N87-4008-46
M	ϕ4x10	(Bi-Tap)BLK	: N89-4010-45
N		HEX. NUT	: N14-0137-04
O	3.5x5.5	PUSH RIVET	: N29-0035-05

P ϕ3x9 (STEPPED SCREW)
: N09-0292-05
Q TERMINAL (GND)
: N08-0128-35

KVR-970B

PARTS LIST

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
R51			RD14GB2E101J	FL-PROOF RD 100 J 2E		
R58			RD14GB2E330J	FL-PROOF RD 33 J 2E		
R71			RD14GB2E390J	FL-PROOF RD 39 J 2E		
R76			RC05GF2H106M	RC 10M M 2H		
R84 ,85		*	RD14BB2C114J	RD 110K J 2C		
R130			RS14GB3D330J	FL-PROOF RS 33 J 3D		
R131			RS14GB3A181J	FL-PROOF RS 180 J 3A		
R133			RD14GB2E102J	FL-PROOF RD 1K J 2E		
R134			RD14GB2H392J	FL-PROOF RD 3.9K J 2H		
VR1			R12-3312-05	TRIMMING POT. (VCO ADJ. 10K)		
VR2			R12-3313-05	TRIMMING POT. (SEPA. ADJ. 50K)		
S1 ,2	2C		S31-2072-05	SLIDE SW. (DE-EMPH./CH. SPACE)		
D1			1S1555	DIODE		
D1			1S2076	DIODE		
D2			KV1226(EF)	VARIABLE CAPACITANCE DIODE		
D3			1S1555	DIODE		
D3			1S2076	DIODE		
D6 -15			1S1555	DIODE		
D6 -15			1S2076	DIODE		
D16		*	RD6.2E(B1)	ZENER DIODE		
D17		*	RD30E(B2)	ZENER DIODE		
IC1			LA1245	IC..(AM)		
IC2			UPC1163H	IC..(FM-IF)		
IC3			HA11225	IC..(FM-IF)		
IC4		*	LA3390	IC..(MPX)		
Q1			2SC1675	TRANSISTOR (FM-IF AMP)		
Q1			2SC1923	TRANSISTOR (FM-IF AMP)		
Q2			2SC2320(E,F)	TRANSISTOR (AM FILTER)		
Q2			2SC945(A)(Q,P)	TRANSISTOR (AM FILTER)		
Q3			2SA733(A)(Q,P)	TRANSISTOR (AM STOP SIGNAL)		
Q4 -9			2SC2320(E,F)	TRANSISTOR (AUTO STOP-IF MUTE)		
Q4 -9			2SC945(A)(Q,P)	TRANSISTOR (AUTO STOP-IF MUTE)		
Q10			2SA733(A)(Q,P)	TRANSISTOR (S-METER)		
Q11			2SC2320(E,F)	TRANSISTOR (MUTING SIGNAL)		
Q11			2SC945(A)(Q,P)	TRANSISTOR (MUTING SIGNAL)		
Q12			2SD863(E,F)	TRANSISTOR (REGULATOR)		
Q13			2SC2003(M,L)	TRANSISTOR (REGULATOR)		
Q16			2SK161(Y)	FET (AM STEREO)		
Q17			2SC2320(E,F)	TRANSISTOR (AM STEREO)		
Q17			2SC945(A)(Q,P)	TRANSISTOR (AM STEREO)		
52	2D	*	W02-0542-05	FM FRONT-END ASSY		
POWER AMPLIFIER UNIT (X07-1900-82)						
C3 -6			CQ93FM1H103K	MYLAR 0.01UF K		
-		*	N91-3012-46	TP HEAD TAPPING SCREW		
R1 ,2			RD14GB2E151J	FL-PROOF RD 150 J 2E		
R3 -6			RD14GB2E270J	FL-PROOF RD 27 J 2E		
R7 -10			RD14GB2E390J	FL-PROOF RD 39 J 2E		
R15 -18			RD14GB2E470J	FL-PROOF RD 47 J 2E		
R19			RD14GB2E4R7J	FL-PROOF RD 4.7 J 2E		
R22			RD14GB2E4R7J	FL-PROOF RD 4.7 J 2E		
R24 ,25			RD14GB2E4R7J	FL-PROOF RD 4.7 J 2E		

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Q52 ,53			2SA1123(Q,R,S)	TRANSISTOR (3RD DIF-AMPS LOAD)		
VIDEO UNIT (X13-4270-80)						
C3 ,4			CQ93FM1H472K	MYLAR 0.0047UF K		
C5 ,6			CQ93FM1H392K	MYLAR 3900PF K		
C7 ,8			CE04GW1H2R2M	LL-ELEC 2.2UF 50WV		
C9			CE04GW1H010M	LL-ELEC 1.0UF 50WV		
C10			CQ93FM1H123J	MYLAR 0.012UF J		
C11			CQ93FM1H332J	MYLAR 0.0033UF J		
C12			CQ93FM1H123J	MYLAR 0.012UF J		
C13			CQ93FM1H332J	MYLAR 0.0033UF J		
C14			CQ93FM1H123J	MYLAR 0.012UF J		
C15			CQ93FM1H332J	MYLAR 0.0033UF J		
C16			CE04GW1H2R2M	LL-ELEC 2.2UF 50WV		
C20			CQ93FM1H223K	MYLAR 0.022UF K		
C21			CC45FSL1H181J	CERAMIC 180PF J		
C22			CQ93FM1H223K	MYLAR 0.022UF K		
C30			CC45FSL1H680J	CERAMIC 68PF J		
C32			CC45FSL1H221J	CERAMIC 220PF J		
C35			CC45FSL1H271J	CERAMIC 270PF J		
C36			CC45FSL1H391J	CERAMIC 390PF J		
C45			CK45FB1H561K	CERAMIC 560PF K		
PJ7	1D	*	E13-0222-05	PHONO JACK (VIDEO)		
PJ8	1C,2C		E13-0492-05	PHONO JACK (AUDIO)		
L1			L40-4705-25	SMALL FIXED INDUCTOR		
R55 ,56			RD14GB2E270J	FL-PROOF RD 27 J 2E		
R65			RD14GB2E100J	FL-PROOF RD 10 J 2E		
R91			RD14GB2E820J	FL-PROOF RD 82 J 2E		
VR1	3C	*	R11-4027-05	POT. (AUDIO INJECTION 50K B)		
VR2	2C	*	R11-5015-05	POT. (FADER 100K A)		
VR3	3C	*	RO1-1018-05	POT. (PICTURE CONTROL 2K B)		
S1A -C	3C	*	S42-3070-15	MULTI. PUSH SW. (N.F/EHSR/A.I)		
S2	2C	*	S42-2092-05	MULTI. PUSH SW. (ANT./DUBBING)		
S3	2C	*	S42-4030-05	MULTI. PUSH SW. (VCR A,B,VDP,..)		
S4 ,5	2D,1C		S31-2056-05	SLIDE SW. (VCR A,B MONO-STEREO)		
D1		*	RD7.5E(B1)	ZENER DIODE(DC BIAS CIRCUIT)		
D2			1N60	DIODE (FADER VAR.LIM.)		
D3 ,4			1S1555	DIODE		
D3 ,4			1S2076	DIODE		
IC1 -4			AN6555F	IC (N.F,P.S,BIAS,AMP)		
Q1			2SC1685(R,S)	TRANSISTOR (FADER/D2 CONTROL)		
Q1			2SC2320(E,F)	TRANSISTOR (FADER/D2 CONTROL)		
Q1			2SC945(A)(Q,P)	TRANSISTOR (FADER/D2 CONTROL)		
Q2			2SC1675	TRANSISTOR (PIC.CONT. 1.8MHZ)		
Q2			2SC1923	TRANSISTOR (PIC.CONT. 1.8MHZ)		
Q3			2SA1127NC(R,S)	TRANSISTOR (RF AMP)		
Q3			2SA733(A)(Q,P)	TRANSISTOR (RF AMP)		
Q3			2SA999(E,F)	TRANSISTOR (RF AMP)		
Q4			2SC1675	TRANSISTOR (RF AMP)		
Q4			2SC1923	TRANSISTOR (RF AMP)		
Q5			2SC1360	TRANSISTOR (RF AMP)		
Q6 ,7			2SC2003	TRANSISTOR (RF AMP)		
SUB-CIRCUIT UNIT (X13-4280-80)						

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R28			R92-0167-05	METAL-PLATE 0.22 K 3H		
R33			R92-0167-05	METAL-PLATE 0.22 K 3H		
R35 -38			R92-0167-05	METAL-PLATE 0.22 K 3H		
R53 ,54			R92-0167-05	METAL-PLATE 0.22 K 3H		
VR1 ,2			R12-0077-05	TRIMMING POT. (IDLE ADJ. 100)		
D1 ,2			1S1555	DIODE		
D1 ,2			1S2076	DIODE		
D3 -14			1S2076A	DIODE		
D15 ,16			STV-3H(Y)	VARISTOR		
⚠ Q1 ,2		*	2SC2591*1(Q,R)	TRANSISTOR (DRIVER)		
⚠ Q3 ,4		*	2SA1111*1(Q,R)	TRANSISTOR (DRIVER)		
⚠ Q6 ,7		*	2SA1294(Q,Y)	TRANSISTOR (POWER)		
⚠ Q10 ,11		*	2SC3263(Q,Y)	TRANSISTOR (POWER)		
Q13 ,14			2SC2320(E,F)	TRANSISTOR (CURRENT DETECT)		
Q13 ,14			2SC828A(Q,R)	TRANSISTOR (CURRENT DETECT)		
Q13 ,14			2SC945(A)(Q,P)	TRANSISTOR (CURRENT DETECT)		
Q15 -18			2SA733(A)(Q,P)	TRANSISTOR (CURRENT DET./LIM.)		
Q15 -18			2SA999(E,F)	TRANSISTOR (CURRENT DET./LIM.)		
Q19 ,20			2SC2320(E,F)	TRANSISTOR (CURRENT DET./LIM.)		
Q19 ,20			2SC828A(Q,R)	TRANSISTOR (CURRENT DET./LIM.)		
Q19 ,20			2SC945(A)(Q,P)	TRANSISTOR (CURRENT DET./LIM.)		
AUDIO UNIT (X09-2020-80)						
D28 -46			B30-0230-05	LED (PHONO,FM,AM,POWER LEVEL)		
C1 ,2			CC45FSL1H221J	CERAMIC 220PF J		
C3 ,4			CK45FB1H331K	CERAMIC 330PF K		
C9 ,10			CQ93FM1H393J	MYLAR 0.039UF J		
C11 ,12			CQ93FM1H113J	MYLAR 0.011UF J		
C15 ,16			CK45FB1H331K	CERAMIC 330PF K		
C25 ,26			CK45FB1H471K	CERAMIC 470PF K		
C29 ,30			CQ93FM1H333K	MYLAR 0.033UF K		
C33 ,34			CC45FSL1H101J	CERAMIC 100PF J		
C47 -50			CQ93FM1H223K	MYLAR 0.022UF K		
C55 -58			CQ93FM1H333K	MYLAR 0.033UF K		
C59 -62			CK45FB1H102K	CERAMIC 0.001UF K		
C71 ,72			CQ93FM1H333K	MYLAR 0.033UF K		
C73 ,74			CK45FB1H102K	CERAMIC 0.001UF K		
C77 ,78			CC45FSL1H470J	CERAMIC 47PF J		
C81 ,82			CC45FSL1H101J	CERAMIC 100PF J		
C83 ,84			CQ93FM1H332K	MYLAR 0.0033UF K		
C85 ,86			CC45FSL1H220J	CERAMIC 22PF J		
C89 ,90			CC45FSL1H030C	CERAMIC 3.0PF C		
C91 ,92			CC45FSL1H271J	CERAMIC 270PF J		
C93 ,94			CC45FSL1H470J	CERAMIC 47PF J		
C95 ,96			CC45FSL1H030C	CERAMIC 3.0PF C		
C101,102			CC45FSL1H221J	CERAMIC 220PF J		
C103,104			CQ93M2A473K	MYLAR 0.047UF K		
C107,108			CQ93M2A103K	MYLAR 0.01UF K		
C113,114		*	CE04HW1H100M	NP-ELEC 10UF 50WV		
C117,118			CQ93FM1H472K	MYLAR 0.0047UF K		
C122		*	CE04HW1C220M	NP-ELEC 22UF 16WV		
C127,128			CK45FB1H561K	CERAMIC 560PF K		
C133,134		*	CE04FW2A101M	ELECTRO 100UF 100WV		
C136		*	CE04FW1J470M	ELECTRO 47UF 63WV		

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C138		*	CE04FW1J4R7M	ELECTRO 4.7UF 63WV		
C139-142			CK45E2H103P	CERAMIC 0.01UF P		
C143,144		*	C90-1249-05	ELECTRO 7500UF 71WV		
C152			CC45FSL1H101J	CERAMIC 100PF J		
C156			CK45FF1H473Z	CERAMIC 0.047UF Z		
60	1C		E20-0817-05	LOCK TERMINAL BOARD(SPEAKER)		
-			E23-0125-05	TERMINAL (GND)		
PJ3	2B		E11-0103-05	PHONE JACK (HEADPHONE)		
PJ4	3B,3C		E11-0124-05	PHONE JACK (MICROPHONE)		
PJ5	2D		E13-0436-05	PHONO JACK (TAPE A,ADP)		
PJ6	2D		E13-0620-05	PHONO JACK (PHONO,TAPE B)		
Δ F1 ,2	1B,1C		F05-3523-05	FUSE (3.5A 250V)		
Δ F3	2B		F05-2023-05	FUSE (2.0A 250V)		
62	2B		J13-0055-05	FUSE CLIP		
L3 ,4			L39-0085-05	PHASE-COMPENSATION COIL		
CP1		*	R90-0239-05	MULTI-COMP		
CP2		*	R90-0240-05	MULTI-COMP		
R63 -66		*	RD14BB2C122J	RD 1.2K J 2C		
R73 -76		*	RD14BB2C914J	RD 910K J 2C		
R101-104			RD14GB2E911J	FL-PROOF RD 910 J 2E		
R109,110			RD14GB2E392J	FL-PROOF RD 3.9K J 2E		
R111,112			RD14GB2E121J	FL-PROOF RD 120 J 2E		
R113,114			RS14GB3A221J	FL-PROOF RS 220 J 3A		
R115-118			RD14GB2E221J	FL-PROOF RD 220 J 2E		
R123,124			RS14GB3D4R7J	FL-PROOF RS 4.7 J 3D		
R125,126			RS14GB3A100J	FL-PROOF RS 10 J 3A		
R127,128			RD14GB2H100J	FL-PROOF RD 10 J 2H		
R129,130			RS14GB3A561J	FL-PROOF RS 560 J 3A		
R131-134			RS14GB3A821J	FL-PROOF RS 820 J 3A		
R139,140		*	RD14BB2C512J	RD 5.1K J 2C		
R141,142			RD14GB2H272J	FL-PROOF RD 2.7K J 2H		
R143,144			RD14GB2E330J	FL-PROOF RD 33 J 2E		
R157,158			RD14GB2E221J	FL-PROOF RD 220 J 2E		
R166			RD14GB2E470J	FL-PROOF RD 47 J 2E		
R167			RD14GB2H330J	FL-PROOF RD 33 J 2H		
R177			RD14GB2E100J	FL-PROOF RD 10 J 2E		
R179			RS14GB3D182J	FL-PROOF RS 1.8K J 3D		
R183		*	RS14GB3D103J	FL-PROOF RS 10K J 3D		
R184			RS14GB3D152J	FL-PROOF RS 1.5K J 3D		
R187			RS14GB3D470J	FL-PROOF RS 47 J 3D		
R188			RD14GB2E121J	FL-PROOF RD 120 J 2E		
R189			RS14GB3A221J	FL-PROOF RS 220 J 3A		
R190			RS14GB3D102J	FL-PROOF RS 1K J 3D		
R193			RD14GB2E121J	FL-PROOF RD 120 J 2E		
R194			RS14GB3A221J	FL-PROOF RS 220 J 3A		
R195			RS14GB3D102J	FL-PROOF RS 1K J 3D		
R201		*	RD14BB2C512J	RD 5.1K J 2C		
VR1	2B,2C	*	R06-5109-05	POT. (VOLUME CONTROL 100K)		
VR2	3C	*	R10-5012-05	POT. (MIC MIX VOL. 50K ZD)		
VR3 -5	2B	*	R06-3038-05	POT. (TONE CONTROL VOL. 10K B)		
VR6	2C	*	R06-3037-05	POT. (BALANCE VOL. 10K MN)		
VR7 ,8			R12-0502-05	TRIMMING POT. (DC OFFSET 100B)		

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RL1			S51-2045-05	MAGNETIC RELAY		
S1A -C	3C	*	S42-3071-05	MULTIPLE PUSH SW. (PHONO/FM/AM)		
S2	2C	*	S29-6006-05	ROTARY SLIDE SW. (TAPE SEL.)		
S3A -B	2C	*	S42-2093-05	MULTIPLE PUSH SW. (LOUD/ADP-IN)		
S4A -B	2C	*	S42-2093-05	MULTIPLE PUSH SW. (FIL.HI/LOW)		
S5A -B	2B		S42-2062-05	MULTIPLE PUSH SW. (SPEAKER A,B)		
D1 ,2			1S1555	DIODE		
D1 ,2			1S2076	DIODE		
D3 ,4			RD5.1E(B2)	ZENER DIODE		
D5 -10			1N60	DIODE		
D11 ,12			RD5.1E(B2)	ZENER DIODE		
D13 ,14			1S1555	DIODE		
D13 ,14			1S2076	DIODE		
D15 ,16			RD8.2E(B2)	ZENER DIODE		
D17 -20			1S2076A	DIODE		
D21 ,22			W06B	DIODE		
D23 ,24		*	M4C-52-12	DIODE		
D25			RB-151LFA	DIODE		
D26			RD13E(B3)	ZENER DIODE		
D27			RD20E(B3)	ZENER DIODE		
D47 ,48			TF620M	SCR		
IC1 ,2			NJM4558D-N	IC (EQ./MIC AMP)		
IC3			NJM2041D-D	IC (FLAT AMP)		
IC4 ,5			NJM4558D-N	IC (TONE,LOG AMP)		
IC6			UPC1237H	IC (DC PROTECTION)		
Q1 -4			2SK163(L,M)	FET (DIFFERENTIAL AMP)		
Q5 ,6			UPA68H(L)	DUAL FET (DIFFERENTIAL AMP)		
Q7 -10			2SC1845(F,E)	TRANSISTOR (VOLTAGE AMP)		
Q11 ,12			2SA1123(Q,R,S)	TRANSISTOR (CURRENT/LEVEL AMP)		
Q13 ,14			2SA733(A)(Q,P)	TRANSISTOR (CURRENT/LEVEL AMP)		
Q13 ,14			2SA999(E,F)	TRANSISTOR (CURRENT/LEVEL AMP)		
Q15 ,16			2SA1123(Q,R,S)	TRANSISTOR (CASCORD)		
Q17 ,18			2SC2631(Q,R,S)	TRANSISTOR (CURRENT MIRROR)		
Q19 ,20			2SA954	TRANSISTOR (CURRENT REGULATOR)		
Q21 -36			2SC1685(R,S)	TRANSISTOR (POWER METER)		
Q21 -36			2SC2320(E,F)	TRANSISTOR (POWER METER)		
Q21 -36			2SC945(A)(Q,P)	TRANSISTOR (POWER METER)		
Q37 ,38			2SC2631(Q,R,S)	TRANSISTOR (LOAD DETECT)		
Q39			2SA992(F,E)	TRANSISTOR (POWER LIMITER SW.)		
Q40			2SA954	TRANSISTOR (D47 GATE DRIVER)		
Q41			2SC1845(F,E)	TRANSISTOR (SWITCH)		
Q42			2SA992(F,E)	TRANSISTOR (SWITCH)		
Q43			2SC2003	TRANSISTOR (D48 GATE DRIVER)		
Q44 ,45			2SC1685(R,S)	TRANSISTOR (+14V AVR DET.,AVR)		
Q44 ,45			2SC2320(E,F)	TRANSISTOR (+14V AVR DET.,AVR)		
Q44 ,45			2SC945(A)(Q,P)	TRANSISTOR (+14V AVR DET.,AVR)		
Q46			2SD762	TRANSISTOR (AVR)		
Q47			2SC1685(R,S)	TRANSISTOR (+20V AVR DET.)		
Q47			2SC2320(E,F)	TRANSISTOR (+20V AVR DET.)		
Q47			2SC945(A)(Q,P)	TRANSISTOR (+20V AVR DET.)		
Q48			2SD762	TRANSISTOR (+20V AVR)		
Q49 ,50			2SA733(A)(Q,P)	TRANSISTOR (-20V AVR DET.,AVR)		
Q49 ,50			2SA999(E,F)	TRANSISTOR (-20V AVR DET.,AVR)		
Q51			2SD762	TRANSISTOR (-20V AVR)		

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D1 -6	3B	*	B30-0496-05	LED.... GRN (VIDEO SEL.)		
SYNTHESIZER UNIT (X14-1480-82)						
D2 -7	2B	*	B30-0491-05	LED..RED(PRESET STATION)		
D14 -18	2B	*	B30-0492-05	LED..RED(SIGNAL METER)		
D19 ,20	2B	*	B30-0491-05	LED..ABR(STEREO)		
D23	2B	*	B30-0491-05	LED..ABR(STOP LEVEL..LOW)		
PL1 -3	2C	*	B30-0490-05	LAMP..(MEMO,TUNED,ST.LEVEL-HI)		
C2 -4			CK45B1H472K	CERAMIC 0.0047UF K		
C6 ,7			CC45FCH1H330J	CERAMIC 33PF J		
C10			CK45FF1H223Z	CERAMIC 0.022UF Z		
C11			CK45FF1H103Z	CERAMIC 0.01UF Z		
C15			CK45FF1H473Z	CERAMIC 0.047UF Z		
C16 ,17			CK45FF1H103Z	CERAMIC 0.01UF Z		
C18			CK45FF1H223Z	CERAMIC 0.022UF Z		
C19		*	CED4HW1HR22M	NP-ELEC 0.22UF 50WV		
C22 -24			CK45FF1H103Z	CERAMIC 0.01UF Z		
X1			L77-0578-05	CRYSTAL RESONATOR		
CP1			R90-0192-05	MULTI-COMP 47KX13 J 2B		
CP2			R90-0193-05	MULTI-COMP 47KX9 J 2B		
R1			RD14BB2E220J	RD 22 J 2E		
R17			RD14GB2E101J	FL-PROOF RD 100 J 2E		
R21		*	RD14BB2C433J	RD 43K J 2C		
S1-1-6	2B		S42-6015-05	MULTI.PUSH SW.(PRESET STATION)		
S2-1-3	2B	*	S42-3069-05	MULTI.PUSH SW.(MEMO.TUNING)		
S3-1-3	2B	*	S42-3068-05	MULTI.PUSH SW.(A/M,ST/M,STPL)		
BD	2B		FIP7B8CS	FLUORESCENT INDICATOR TUBE		
D1			1S1555	DIODE		
D1			1S2076	DIODE		
D8 -13			1S1555	DIODE		
D8 -13			1S2076	DIODE		
D21 ,22			1S1555	DIODE		
D21 ,22			1S2076	DIODE		
IC1			TD6301AP	IC (FL STATIC DRIVER)		
IC2		*	TC9157P	IC (PLL STATIC CONT.)		
IC3			TD6104P	IC (FM PRE SCALER)		
Q2			2SC2320(E,F)	TRANSISTOR(KEY INPUT CONT.)		
Q3 ,4		*	2SD637(R,S)	TRANSISTOR(FM SCAN STEP-F.SW.)		
Q5 ,6			2SC1845(E)	TRANSISTOR(PLL LOOP FIL.2-21V)		
Q7		*	2SB642(R,S)	TRANSISTOR(S METER DRIVER)		
Q8			2SC2320(E,F)	TRANSISTOR(S METER DRIVER)		
Q9 -11		*	2SD639(R,S)	TRANSISTOR(LAMP DRIVER)		
RF CONVERTER (W02-0539-05)						
D1 ,2		*	1SS110	DIODE		
IC1		*	AN3110	IC		
Q1 ,4		*	2SC3130	TRANSISTOR		
Q1 ,4			2SC2480	TRANSISTOR		
Q1 ,4			2SC2735	TRANSISTOR		
Q1 ,4			2SC2712	TRANSISTOR		

E: Scandinavia & Europe H:Audio Club K: USA P: Canada
S: South Africa T: England U: PX(Far East, Hawaii)
UE : AAFES(Europe) X: Australia M: Other Areas

⚠ Indicates safety critical component.

TRIO-KENWOOD CORPORATION
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PARTS LIST

* New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
D1 -6	3B	*	B30-0496-05	LED....GRN (VIDEO SEL.)		
SYNTHESIZER UNIT (X14-1480-82)						
D2 -7	2B	*	B30-0491-05	LED..RED(PRESET STATION)		
D14 -18	2B	*	B30-0492-05	LED..RED(SIGNAL METER)		
D19 ,20	2B	*	B30-0491-05	LED..ABR(STEREO)		
D23	2B	*	B30-0491-05	LED..ABR(STOP LEVEL..LOW)		
PL1 -3	2C	*	B30-0490-05	LAMP..(MEMO.TUNED.ST.LEVEL-HI)		
C2 -4			CK45B1H472K	CERAMIC 0.0047UF K		
C6 ,7			CC45CH1H330J	CERAMIC 33PF J		
C10			CK45FF1H223Z	CERAMIC 0.022UF Z		
C11			CK45FF1H103Z	CERAMIC 0.01UF Z		
C15			CK45FF1H473Z	CERAMIC 0.047UF Z		
C16 ,17			CK45FF1H103Z	CERAMIC 0.01UF Z		
C18			CK45FF1H223Z	CERAMIC 0.022UF Z		
C19		*	CE04HW1HR22M	NP-ELEC 0.22UF 50WV		
C22 -24			CK45FF1H103Z	CERAMIC 0.01UF Z		
X1			L77-0578-05	CRYSTAL RESONATOR		
CP1			R90-0192-05	MULTI-COMP 47KX13 J 2B		
CP2			R90-0193-05	MULTI-COMP 47KX9 J 2B		
R1			RD14BB2E220J	RD 22 J 2E		
R17			RD14GB2E101J	FL-PROOF RD 100 J 2E		
R21		*	RD14BB2C433J	RD 43K J 2C		
S1-1-6	2B		S42-6015-05	MULTI.PUSH SW. (PRESET STATION)		
S2-1-3	2B	*	S42-3069-05	MULTI. PUSH SW. (MEMO. TUNING)		
S3-1-3	2B	*	S42-3068-05	MULTI. PUSH SW. (A/M.ST/M.STPL)		
80	2B		FIP7B8CS	FLUORESCENT INDICATOR TUBE		
D1			1S1555	DIODE		
D1			1S2076	DIODE		
D8 -13			1S1555	DIODE		
D8 -13			1S2076	DIODE		
D21 ,22			1S1555	DIODE		
D21 ,22			1S2076	DIODE		
IC1			TD6301AP	IC (FL STATIC DRIVER)		
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D1 ,2		*	1SS110	DIODE		
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Q1 ,4		*	2SC3130	TRANSISTOR		
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